

CAT Reporting Technical Specifications for Plan Participants

10/21/2020

Version 3.2.2-r1

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Executive Summary

The Consolidated Audit Trail (CAT) tracks orders throughout their lifecycle and identifies the exchanges and broker-dealers handling them. This allows regulators to more efficiently and accurately track activity in eligible securities — those under the jurisdiction of the Securities and Exchange Commission (the "SEC") — throughout the U.S. markets. CAT is created by a joint plan (CAT NMS Plan) of the Plan Participants or simply "Participants."

Participants are required to report order events into CAT. Reportable order events include, but are not limited to: accepted orders, routes, replaced orders, canceled orders and executions. Participants are responsible for submitting reference information, including the symbols that are active for the exchange on a particular day, and the Participants' member lists.

This document provides Participants with information to understand their responsibilities to comply with SEC Rule 613 and the CAT NMS Plan. It describes the requirements for reporting data to CAT, including detailed information about data elements and file formats of each reportable event. This document also describes how Participants should submit files to CAT, including access instructions, network and transport options, and testing requirements.

This document does not include information for Industry Members. A separate document, *CAT Reporting Technical Specifications for Industry Members*, will be published to provide technical specifications for Industry Members.

Table 1: Contents and Structure

Num	Section	Description
1	Introduction	Describes the document purpose, overview of requirements, and compliance dates.
2	Reference Data	Describes the reference data the SROs are required to report to CAT, including member information, equity symbols, option dictionary and corporate actions.
3	Special Data Elements and Common Events	This section describes data elements that are common to most order events, including timestamps, sequence numbers, symbols, material terms of an order, and elements used during the process of creating order lifecycles.
4	Events for Stock Exchanges	Provides an overview of the different types of events involving Stock Exchanges that need to be reported.
5	Events for Options Exchanges	Provides an overview of the different types of events involving Options Exchanges that need to be reported.
6	Other Reporting	Describes the reporting requirements for events that are not covered in sections 4 and 5 (e.g. TRF Reporting).

Num	Section	Description
7	Stock Exchange Event Examples	Illustrates the reporting events from Stock Exchanges.
8	Options Exchange Event Examples	Illustrates the reporting events from Options Exchanges.
9	CAT Submission Process	Describes file and data formats, security, and processes for Participants to submit information to the CAT system.
10	Feedback and Corrections	Describes the procedures for obtaining feedback and how to submit corrections, including different types of feedback messages, elements, and file re-uploads. Provides the formats of the correction reports.
11	Testing	Describes important information about the CAT testing environment and procedures for its use.
12	Additional Information	Provides additional information including information about the CAT Public Website and CAT Service Desk
	Appendix	A. Clock Synchronization Requirements – Describes the requirements and approach for clock synchronization B. Error Codes – Defines error messages generated by CAT C. Corporate Action Formats D. FINRA TRF Fields E. Market Move Scenarios for Issues F. Data Dictionary – Descriptions of Data Elements used in the technical specifications G. Cloud Transfer Service Example

Table 2: Summary of Document Revisions

Version	Date	Author	Description
3.2.0	7/10/2020	FINRA CAT	<i>Administrative updates:</i> - Moved Change Log contents prior to version 3.1.0 to Appendix I (change NOT tracked) - Renamed Change Log to “Summary of Document Revisions” to reduce confusion between document changes and Change Requests - Began reformatting of Appendix F: Data Dictionary (changes NOT tracked) - Updated XTIME in examples to reflect full timestamp format - Added OCOA and OCIR to events for exchOriginCode in Data Dictionary <i>Spec updates:</i> §4 Events for Stock Changes; Appendix F: Add routingParty and session to EOM and EOJ events

Version	Date	Author	Description
			• §5 Events for Options Exchanges: Added new Floor Broker Events (Cboe) • §10.9: Intra Exchange Order Event Feedback ○ Moved to §10.10 ○ Updated to include Intervene linkage feedback and TRF Trade linkage feedback • Appendix B: Added B.2.2 (Intervene feedback error codes) and B.2.3 (Trade Linkage feedback error codes) • Appendix F: Data Dictionary: ○ Added orderAttributes and executionCodes values for LTSE ○ Updated definitions of routingParty and session to clarify use in modified and adjusted events ○ Corrected quoteID to remove Stock Leg Fill event, which does not include the quoteID field
3.2.0-r1	7/17/2020	FINRA CAT	<i>Administrative updates:</i> • Continued reformatting of Appendix F: Data Dictionary (changes NOT tracked) • Updated description of session for EOR to remove reference to matching the value reporting by the routing firm (IM do not provide session) • Added OOJ event for complexOrderID and complexOptionID in Data Dictionary <i>Spec updates:</i> • Appendix F: Data Dictionary: ○ Added cancelReason, handlingInstructions, and orderAttributes values for MEMX ○ Added 'DerivedOrderTraded' cancelReason for MIAX and MIAX Emerald ○ Added cancelReason, handlingInstructions, liquidityCode, orderAttributes, and orderType values for MIAX PEARL Equities • Appendix G updated to clarify placement of feedback if a reporter is not identified in the file name and the reporter has both equities and options buckets
3.2.1	8/7/2020	FINRA CAT	<i>Administrative updates:</i> • Updated §10.1 to provide distinct paths for Options feedback vs. Equities feedback; also corrected types in the path originally provided <i>Spec updates:</i> • Appdenix F: added MEMX to Participant ID list. • Introduced Equity Market Maker (EMM) reporting; updated the following sections: ○ NEW! §2.4 Market Maker Information ○ §9 File Submission Process ○ NEW! §10.8 Feedback and Corrections for Market Maker Dictionary ○ §10.13 Corrections ○ Appendix B.1: Data Ingestion Errors ○ Appendix B.3: Error Prefix Defintion

Version	Date	Author	Description
			○ Appendix F: Data Dictionary ▪ Added: definedMMDEData, marketMakerStatus, marketMakerType, statusTime ▪ Updated: marketMaker, type
3.2.1-r1	8/31/2020	FINRA CAT	<i>Spec updates:</i> • Appendix F: Added new values for NOBO in cancelReasons, executionCodes, and handlingInstructions
3.2.2	9/25/2020	FINRA CAT	<i>Administrative updates:</i> • Updated two references to linkageFailureFileCount in §10.11.3 to linkageErrorFileCount (as defined in §10.11.2.1) • Moved pre-3.2.0 changes from the main change log to the Appendix I historical change log (<i>changes not tracked</i>) <i>Spec updates:</i> • To support intervenue linkage (firm-to-exchange, firm-to-TRF): ○ Appdenix B: Added intervenue link errors for destination did not match. ○ Appendix B: Repurposed OE.TRADELNK error codes 4004 and 5005, previously identified as a mismatched eventTimestampe, to use for mistmatched marketCenterId. ○ Appendix B: Added OE.TRADELNK error codes 4010 and 5011 for reporting or contra IMID cannot be found. • Appendix F: Added 'SYS' timeInForce code for LTSE
3.2.2-r1	10/21/2020	FINRA CAT	<i>Spec updates:</i> • Appendix F: Added new cancelReason name/value pairs for MEMX. • Appendix F: Added new name/value pairs for Cboe Position Compression Cross and Related Futures Cross in executionCodes > SUBLIQ and orderAttributes > AuctionType and executable.

1. Introduction

This document provides Participants with the necessary information to fulfill their reporting obligations to CAT in compliance with SEC Rule 613 and the CAT NMS Plan. Equity Exchanges will be report to CAT via another mechanism until April 2021; therefore, the equity submission specifications have been marked with a grey font.

The document is structured as follows:

Section 1 Introduction provides an overview of the document, rules and requirements, compliance dates, change management, and release management processes. In addition, it provides descriptions of identifiers and data types referenced in this document.

Section 2 Reference Data describes details for reporting member information, equity symbols, options symbols and corporate actions.

Section 3 Special Data Elements and Common Events provides detailed descriptions of common events for equities and options, and how linkages and lifecycles are created.

Section 4 Events for Stock Exchanges provides details regarding the data which must be reported to CAT by each stock exchange Participant. In particular, it details the Stock Reportable Order Events, explains what data elements are necessary and how those elements are to be collected and reported to CAT.

Section 5 Events for Options Exchange provides details regarding the data which must be reported to CAT by each options exchange Participant. In particular, it details the Options Reportable Order Events, explains what data elements are necessary and how those elements are to be collected and reported to CAT.

Section 6 Other Reporting provides reporting requirements and data elements for events that are not covered in sections 4 and 5 (e.g., TRF reporting).

Section 7 Stock Exchange Examples and **Section 8 Option Exchange Event Examples** provide a representative sample of reporting scenarios and examples for both stocks and options. In each scenario, a detailed description is provided of the reportable order events, which data elements should be reported in each event and how the files are formatted. These sections are intended to provide reporters with a set of examples regarding reportable data elements and formats.

Section 9 CAT Submission Process provides information regarding data formats and how to submit information and files to CAT. It includes a general data flow overview, registration process, network and

transport options, and CAT feedback access and reporting hours. Additionally, an overview of CAT data security standards is provided. In this section, reporters can get detailed instructions of how to connect and submit information to CAT.

Section 10 Feedback and Corrections describes the procedures for reporters to obtain feedback following data submission, and how to submit corrections if necessary. This section addresses feedback files, file acknowledgement, basic file integrity, and feedback for reference data and order events. It also describes information on how to submit corrections and repairs to CAT.

Section 11 Testing describes the technical details of the test environment and testing procedures required of reporters. All reporters are required to test their submissions thoroughly before submitting to the CAT Production environment.

Section 12 Additional Information provides descriptions about the CAT public website and how to get help from the Service Desk.

Appendix sections provide important supplemental details including:

- A. Clock Synchronization Requirements** provide information on how each Participant is expected to maintain the required granularity and accuracy of the Business Clock.
- B. Failure Messages** will come in the form of a machine-parseable description of why a file or record was rejected.
- C. Corporate Action Formats** will be reported by each exchange as-is. Examples from various exchanges are listed in this section.
- D. FINRA Trade Reporting Facility ("TRF") Fields**
- E. Market Move Scenarios** which includes use cases for symbol renames and movement between exchanges.
- F. Data Dictionary** that includes detailed explanations and definitions of each data reference used throughout the technical specifications.
- G. CloudTransfer Service example**

1.1. Rule Overview / Requirements

1.1.1. SEC Rule 613

The Securities and Exchange Commission (SEC) approved to adopt Rule 613 under the Securities Exchange Act of 1934 to require national securities exchanges and national securities associations (Self-Regulatory Organizations or SROs) to submit a national market system ('NMS') plan to create, implement, and maintain a consolidated order tracking system, or consolidated audit trail, with respect to the trading of reportable securities — all NMS securities and over the counter ("OTC") Equity securities

under SEC jurisdiction — that would capture customer and order event information for orders in reportable securities, across all markets, from the time of order inception through routing, cancellation, modification, or execution.

Refer to SEC Rule 613, available at: <https://www.sec.gov/news/press-release/2012-2012-134htm> for more details.

1.1.2. CAT NMS Plan

The initial CAT NMS Plan was filed on September 30, 2014, the Commission unanimously approved the CAT NMS Plan on November 15, 2016.

For additional information, please refer to CAT NMS Plan at <http://www.catnmsplan.com/>.

1.2. Change Release Management Process

Changes to this technical specification will be released as follows:

- Prior to the go-live date for system changes
 - ♦ A new specification will be posted to the CAT Public Website
 - ♦ A notice will be posted on the website with a summary of changes and links to relevant information.
 - ♦ One or more email alerts will be sent to plan participants with a summary of changes and links to relevant information.
 - ♦ In some cases, CAT may accept production reporting using the new specification in advance of the go-live date.
 - ♦ Plan Participants that have not conducted testing or production reporting using the new technical specification format will receive support from CAT as the go-live date approaches.
- The new technical specification 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.

1.3. CAT Identifiers

CAT uses a number of identifiers, many of which readily convey their meaning from the context in which they are used. The subsections below include terms associated with the entities that will report data into CAT and their respective roles. As shown in the diagram below, Exchange ID is a subset of Participant ID, which is a subset of Reporter ID.

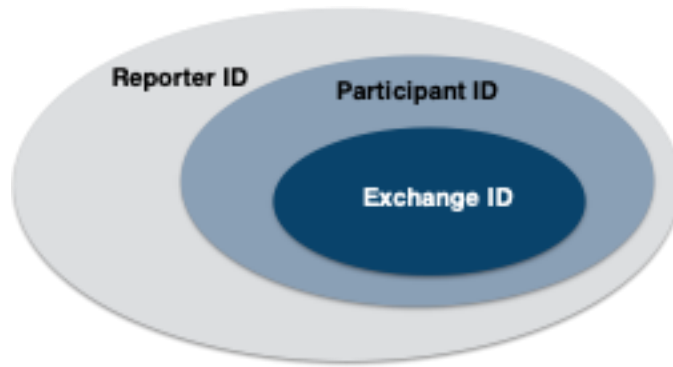


Figure 1: CAT Identifier Hierarchy

1.3.1. CAT Reporter ID

Each entity which reports into CAT will be assigned a unique identifier: a CAT Reporter ID. This ID will uniquely identify each reporter, including plan participants, industry members, and associated reporting facilities. The database of CAT Reporter IDs will be made available both as a downloadable file on the CAT website and through the web portal API.

1.3.2. Participant ID

The Participant ID is an ID assigned by CAT to each plan participant. The value will be the same as the participant's CAT Reporter ID.

1.3.3. Exchange ID

The Exchange ID is an ID assigned by CAT to each stock/options exchange. The actual value will be the same as the exchange Participant ID and Reporter ID, but, as indicated in Figure 1, Exchange ID is a subset of Participant ID, which is a subset of Reporter ID.

1.3.4. Member Alias

Each SRO will assign unique IDs to its industry members. These IDs are aliases for CAT reporters so that reporting firms can use existing identifiers when reporting market events to CAT. It is important that both the member and SRO are aware of the assigned IDs and when they should be used in reports to CAT.

Each SRO has autonomy in assigning their IDs. Note that the same ID could possibly be assigned to different industry members across SROs. Furthermore, a member may have multiple aliases assigned to them by the same SRO. Thus, the alias is only valid in combination with the SRO that assigned the ID. Specifically, when an exchange receives a routed order from one of its members, both the routing

member and the exchange must report the same Member Alias in their reports to CAT in order to properly link the reports to the same order lifecycle.

An industry member can have the same alias value assigned by multiple SROs. Note that an alias is used in conjunction with an identifier that links the alias with the SRO that assigned the alias (either by explicit designation, or implicitly by context).

For example, consider three firms (Firm A, Firm B, and Firm C) and three SRO participants (Participant A, Participant B, and Participant C), and the following table of SRO-assigned member IDs.

Table 3: Example of SRO-assigned Member IDs

FIRM	Participant A	Participant B	Participant C
Firm A	FRMA	AAAA	FRMA
Firm B	FRMB		BBBB
Firm C	FRMC	CCCC	FRMB

Note that Member Alias FRMA is assigned to Firm A by both Participant A and Participant C, and Member Alias FRMB is assigned to two different firms by two different participants. While the same alias is used multiple times, these are valid mappings because the same alias is not assigned multiple times within a participant. Also note that Firm B is not a member of Participant B, and so there is no corresponding mapping.

Thus, each firm will have at least one alias for each SRO in which they have membership. The value may or may not be the same across all participants. When Participant A refers to Firm C, it will use the alias FRMC. Likewise, when Firm C refers to itself in relation to Participant A, it will use the alias FRMC.

Note that industry members can have multiple Member Aliases, but they will also be assigned a unique CAT Reporter ID. CAT maps the SRO-assigned Member Alias values to ensure the same unique CAT Reporter ID assigned to the member firm across SRO's. Note that member dictionary entries apply to data uploaded for the same business date as the member dictionary itself (values do not have to be the same from day to day).

1.4. Fundamental Data Types

The fundamental data types used in this document are described below. A complete list of data types is presented in Appendix F. Data Dictionary.

CAT will accept two kinds of text-based files: JSON and CSV. To support both JSON and CSV submissions, CAT will publish a JSON schema file which 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.

When a data field is marked as either optional or conditional, some records may not provide values for that field. In such a case, the field is simply not reported as part of the JSON record. In a CSV record, it is reported as an empty column.

Table 4: Data Type Descriptions

Data Type	JSON Type	Description
Numeric	NUMBER	A general numeric type, composed of digits, an optional decimal point, followed by more digits (with an optional leading +/- sign). These values, while looking like floating point numbers, should always be read and processed in a way that represents the exact value as represented by the text. Examples: 1235, -1235, 1235.67, -1235.67 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. 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 (visual format would be #####.####). Note that these are maximum limits - the lengths can be smaller. Valid examples which comply with Numeric(6,4) would be -999999.9999, -0.1, 0, 0.0001, and 999999.99. All numeric values must have a whole number portion before the decimal point (e.g. 0.25 can't be represented as .25). The fractional portion is optional. 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)
Price	NUMBER	A Price is shorthand for Numeric(10,8), which can support prices in the inclusive range [-9999999999.99999999, 9999999999.99999999]
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
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

Data Type	JSON Type	Description
Text	STRING	A string, composed of any printable character, except comma (ASCII decimal 44, hex 2C), pipe (ASCII decimal 124, hex 7C), and double quote (ASCII decimal 34, hex 22). When a Text 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	NUMBER	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. For example, 09:30:00.123456789 would be reported as 093000.123456789.
Timestamp	STRING NUMBER	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. For example, January 7, 2017 21:30:00.123456789 in New York would be represented as the string 20170107T213000.123456789. 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. 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
Name Value Pairs	STRING JSON Object	A value of type Text (except the pipe is allowed), composed as described in the Name Value Pairs section below
Array of XXX	ARRAY	When represented in JSON, it is an array of the indicated type (XXX is a placeholder). So, Array of Unsigned would be an array of unsigned integers, and would be represented as [0, 42]. When represented in CSV, it is a series of the indicated type, separated by the pipe symbol. So, the aforementioned array of Unsigned would be represented as 0 42.
Choice	STRING	A Text field, but with an explicit list of acceptable values.
Symbol	STRING	Text (20)
Message Type	STRING	An Alphanumeric(5) field, indicating the type of message being reported
Reporter ID	STRING	Alphanumeric(7) - a CAT Reporter ID
Member Alias	STRING	Text(8) - one of the aliases assigned by an SRO to one of its members
Symbol Alias	STRING	Text (20) - an alias that can be assigned to a symbol

Data Type	JSON Type	Description
Participant ID	STRING	A subclass of Reporter ID that applies only to participants
Exchange ID	STRING	A subclass of Participant ID that only applies to exchanges (all participants except FINRA)

1.4.1. Name Value Pairs

Some fields are described as containing name/value pairs. Name Value Pairs is 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 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.

In some cases, the names are free-format (i.e., undefined). Both the name and any value are left up to the discretion of the reporter and the contents are not validated by CAT.

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 } }.
```

1.4.2. Data Validation

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 Table 4 above. 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 which fail validation will be marked as a failure and will be reported as feedback to the Submitting Member as detailed in Section 10.

2. Reference Data

This section describes the reference or supplemental data required to be reported by each participant.

2.1. Member Information

Each SRO must submit to CAT a directory of information that lists each industry member with which it has a reporting relationship. Each dictionary entry identifies a specific industry member, and assigns one or more IDs to that member. These IDs may be used by the SRO and/or the member when reporting order events to CAT. The industry members listed in the dictionary will also be participant members of the SRO, although this is not always the case. For example, each industry member that submits an order to an exchange must be a registered member of that exchange. However, the exchange may route orders to an industry member that is not a member of that exchange. In either case, the exchange must give at least one Member Alias to each industry member that appear in any of the order events reported to CAT.

Each member may have multiple aliases, but a specific Member Alias may only be assigned once per SRO. Note that the member dictionary is loaded each day, and the values only apply to that trading day. Thus, Member Aliases could be reassigned on subsequent trading days.

The Member Dictionary will be uploaded as a file of newline-delimited JSON objects, one object per member entry. The member dictionary is necessary to process other file uploads, and must be uploaded to CAT no later than t +1 at 4:00AM Eastern, with entries sufficient to support all reports submitted on that trading day. Note that this is a same-day upload requirement whereas order events are required to be reported by 8:00AM Eastern the following trading day.

Table 5: Member Dictionary Entry

Field Name	Data Type	Description	Include Key
type	Message Type	MDE	R
reporter	Reporter ID	The unique identifier assigned to the reporter by CAT	R
ID	Text (20)	The CRD number of the firm, if the status field directly below is set to Active, Inactive, or NonMember. Otherwise (Internal, Other), this must be an ID for the entity that the participant has pre-registered via the web GUI	R
status	Choice	The status of the member for the reporting date. For details, see the Data Dictionary entry for Status Active An active member of the SRO (ID must be CRD) Inactive An inactive member of the SRO (ID must be CRD). The Inactive status can be used if a Participant wants to report a member who	R

Field Name	Data Type	Description	Include Key
		may have been temporarily deactivated. If a member is removed, the member may be reported as Inactive or may be not reported at all. NonMember An entity that is not a member of the SRO. For example, if the routing broker dealer is not a member of the exchange, it would be listed here. (ID must be CRD) Internal Some internal part of the SRO system (a utility or facility) which will be used in reportable events. In this case, the ID must have been a pre-registered with CAT via the web GUI. Other Another entity (e.g., foreign firm) without a CRD number. In this case, the ID must have been pre-registered with CAT via the web GUI.	
memberAliases	Array of Member Alias	A list of Member Alias values for the member, as assigned by this SRO, for use in association with this SRO	R

The following example shows a potential member dictionary for exchange Exch1 where the first entry represents an industry member that is also a member of the reporting SRO, the second entry represents an industry member that is not a member of the reporting SRO, and the third entry represents the SRO itself, with various facilities that have been given Member Alias values.

```
{
  "type": "MDE",
  "reporter": "Exch1",
  "ID": "1234567",
  "status": "Active",
  "memberAliases": [ "FRMA", "FRMA1", "FRMA:U01", "FRMA:U02" ]
}
{
  "type": "MDE",
  "reporter": "Exch1",
  "ID": "7654321",
  "status": "NonMember",
  "memberAliases": [ "FRMB" ]
}
{
  "type": "MDE",
  "reporter": "Exch1",
  "ID": "123xyz",
  "status": "Internal",
  "memberAliases": [ "XXX" ]
}
{
```

```

    "type": "MDE",
    "reporter": "Exch1",
    "ID": "123abc",
    "status": "Internal",
    "memberAliases": [ "ZZZ" ]
  }

```

The next example shows a potential member dictionary for exchange Exch2. Note how the same entities are members of both Exch1 and Exch2, but they may or may not have different Member Alias values with each SRO.

```

{
  "type": "MDE",
  "reporter": "Exch2",
  "ID": "1234567",
  "memberAliases": [ "FRMZ", "FRMZ:U01", "FRMZ:U02" ],
  "status": "Active"
}
{
  "type": "MDE",
  "reporter": "Exch2",
  "ID": "7654321",
  "memberAliases": [ "FRMB" ],
  "status": "Active"
}

```

2.2. Equity Symbols

CAT will maintain a symbol master for all exchange-listed and OTC equities. Each listing exchange (and FINRA) must provide appropriate updates to the symbol master either through the CAT web user interface, or daily file uploads.

Each change to the symbol is persisted as a change event. All normal updates can be accomplished via the file upload mechanism. However, some types of corrections/updates may cause validation conflicts, and must be done via the GUI (and may require a manual override from the help desk). This is done to prevent faulty uploads from erroneously correcting historical events.

Note that corporate actions are reported and maintained separately and are not used to maintain the CAT internal symbol master. Thus, the CAT symbol master must be updated explicitly via the web GUI or a daily file upload.

The data items for a symbol are represented as a JSON object with the following fields, where the effective range of the date is defined as an inclusive range [beginDate, endDate].

Note that the listing symbol upload process applies only to participants responsible for index or listed/OTC equities. See the Market Move Scenarios section in the appendix for discussion about specific examples when an issue is moved from one participant to another.

2.2.1. Adding a New Issue

To add a new issue, an Add Symbol Entry record is submitted. Note that this record is for adding a brand new symbol only – one that has never existed in the CAT system.

Table 6: Add Symbol Entry

Field Name	Data Type	Description	Include Key
type	Message Type	ASE	R
listingParticipant	Participant ID	The listing participant for the symbol being added	R
issueType	Choice	NMS, OTC, Index, ETF	R
symbol	Symbol	The symbol that the exchange will use for the new issue	R
beginDate	Date	The effective date for the symbol	R
endDate	Date	The date the symbol will expire. A value must be entered here, if unknown, use Dec 31 9999	R
companyName	Text(255)	The name of the company, free format text excluding commas and any other unsupported characters. Refer to the Fundamental Data Types section for a complete list	R
lotSize	Unsigned	The number of shares in a round lot (not required for Index)	C
IPO	Boolean	Indicates whether the issue is an Initial Public Offering ("IPO"). The participants must set this to false on the day after the IPO occurs (required for NMS)	C
test	Boolean	Indicates whether the symbol is a designated "test" symbol used by participants for testing production systems	R
attributes	Symbol Entry Pairs	A Name/Value Pairs field, containing attributes associated with a symbol that are meaningful, but may not be permanent. For example, the tick pilot group is meaningful now, but may not be so in the future. In addition, there may be other "pilots" that may require additional information for symbols. Each value must be defined in the Symbol Entry Pairs data dictionary	C

This record type is to be submitted when a symbol is assigned to a brand new issue for the very first time. The symbol must not be assigned to any other participant in the beginDate, endDate range. The symbol will be brand new, and will be assigned a new and unique internal CAT Symbol ID. It will not be linked to any other symbol.

Once a symbol has been added to the database, it cannot be removed via the API. A request must be made to the CAT support desk to perform such an operation. Even then, a symbol will only be removed if it was a clear error, and the symbol was never activated.

2.2.2. Restating an Issue

An existing symbol can be restated, providing an explicit check that the exchange and CAT have the same information for the symbol. This is accomplished by submitting a Symbol Master Restatement. The fields for a restatement are identical to those for an add. However, it makes explicit the understanding that the symbol is expected to already be present in the system.

The values presented in the restatement must exactly match what is in the CAT database, or the record will be rejected.

Table 7: Symbol Master Restatement

Field Name	Data Type	Description	Include Key
type	Message Type	SMRST	R
listingParticipant	Participant ID	The listing participant for the symbol being added	R
issueType	Choice	NMS, OTC, Index, ETF	R
symbol	Symbol	The symbol that the exchange will use for the new issue	R
beginDate	Date	The effective date for the symbol	R
endDate	Date	The date the symbol will expire. A value must be entered here, if unknown, use Dec 31 9999	R
companyName	Text(255)	The name of the company, free format text excluding commas and any other unsupported characters. Refer to the Fundamental Data Types section for a complete list	R
lotSize	Unsigned	The number of shares in a round lot (not required for Index)	C
IPO	Boolean	Indicates whether the issue is an Initial Public Offering ("IPO"). The participants must set this to false on the day after the IPO occurs (required for NMS)	C
test	Boolean	Indicates whether the symbol is a designated "test" symbol used by participants for testing production systems	R
attributes	Symbol Entry Pairs	A Name/Value Pairs field, containing attributes associated with a symbol that are meaningful, but may not be permanent. For example, the tick pilot group is meaningful now, but may not be so in the future. In addition, there may be other "pilots" that may require additional information for symbols.	C

Field Name	Data Type	Description	Include Key
		Each value must be defined in the Symbol Entry Pairs data dictionary.	

2.2.3. Updating an Issue

An issue is updated when any field of an existing issue needs to be changed. Two Symbol Entry objects are passed. The first represents the expected current state of the symbol entry before being updated, and the second represents the new values for the fields that will be updated. The current state of the database must match the expected symbol entry or the update request will be rejected (when comparing name value pairs, the order in which the name/values appear is not considered). If successful, the database will be changed to reflect the updates requested, and the response will contain a complete updated entry.

Table 8: Update Symbol Entry

Field Name	Data Type	Description	Include Key
type	Message Type	USE	R
expected	Symbol Entry	A JSON subobject with all the same field definitions that are in Add Symbol Entry, except the type field. Every field must have a value which exactly matches the current state of the entry in the database. NOTE: The field 'beginDate' is optional for updates, and can be omitted from the 'expected' object	R
update	Symbol Entry	A JSON subobject with all the same field definitions that are in Add Symbol Entry, except the type field. The fields that are to be modified should be set to the newly desired values. All others are to be left out	R

The SRO requesting the update must be the current "owner" (i.e., listing participant) of the symbol. All updates are kept, and the history of updates can be queried for a given CAT Symbol ID or a symbol name. Note that an update request will not allow the listing participant to be changed. To change the listing participant of a symbol, submit a Symbol Master Transfer record.

2.2.4. Transferring an Issue

To transfer an existing issue from one listing participant to another, the new ownership participant must submit a Symbol Master Transfer request. The request will be validated for data accuracy, and once validated, a transfer will be scheduled inside the system.

Table 9: Symbol Master Transfer

Field Name	Data Type	Description	Include Key
type	Message Type	SMXFR	R
ownershipDate	Date	A date the issue was known to be in the CAT system	R
ownershipParticipant	Participant ID	The listing participant who owned the issue on the ownershipDate	R
ownershipSymbol	Symbol	The symbol for the issue for the ownershipParticipant on the ownershipDate	R
listingParticipant	Participant ID	The new listing participant to whom the issue will be transferred	R
issueType	Choice	The issue type of the symbol once transferred to the new owner	O
symbol	Symbol	The symbol to be used once the transfer is complete	R
companyName	Text(255)	The name of the company, free format text excluding commas and any other unsupported characters. Refer to the Fundamental Data Types section for a complete list	O
lotSize	Unsigned	The number of shares in a round lot (not required for Index)	O
IPO	Boolean	Indicates whether the issue is an Initial Public Offering ("IPO"). The participants must set this to false on the day after the IPO occurs (required for NMS)	O
test	Boolean	Indicates whether the symbol is a designated "test" symbol used by participants for testing production systems	O
attributes	Symbol Entry Pairs	A Name/Value Pairs field, containing attributes associated with a symbol that are meaningful, but may not be permanent	O
effectiveDate	Date	The effective date for the transfer	R

Transfer requests should be submitted prior to the `effectiveDate`, in which case the transfer will be scheduled for the night before the `effectiveDate`. If the `effectiveDate` is the same date as the record submission, then the request will be applied immediately instead of being scheduled. This use pattern may be necessary at times, but is discouraged as it does not leave much time for review of the changes by all parties and opens a potential race condition window.

Current owners are encouraged to release the symbol prior to transfer by submitting an Update Symbol Entry record (USE), and setting the `endDate` to be the last day they are responsible for the issue. This is

especially important if there may be a gap between the time the symbol is delisted and resisted by another exchange.

If the current owner has not submitted an update to their `endDate` when the transfer is applied, then the current owner's `endDate` will be automatically updated to be one day prior to the `effectiveDate` in the transfer request.

When a transfer is applied, then new `endDate` will always be 99991231, effectively assigning the symbol to the new listing participant until it is changed.

If an optional field is present, that field will be changed to the new value when the transfer has taken place. Otherwise that field will retain its value after the transfer.

The submitted record may be rejected when submitted. Among these reasons:

- Submitted record contains malformed fields
- `listingParticipant` is not the participant submitting the request
- Combination of `ownershipDate`, `ownershipParticipant`, and `ownershipSymbol` does not reference a valid symbol in the CAT database
- `effectiveDate` is in the past

A report will be available each day, in conjunction with the symbol master report that contains all activated and pending transfers.

If a transfer must take place, but can't be entered into the system for some reason (e.g., the request is being rejected, or it was not submitted in time), then the resolution can be accomplished by contacting the CAT help desk.

2.2.5. Daily File Uploads

Additions, restatements, updates, and transfers can be included in the same file, or they can be submitted in separate files. For an update to be successful, the participant uploading the update must be the owning listing participant, and the "expected" data must exactly match the current state of the system.

Order is important within the daily file upload, as each action will be performed in the order in which it appears in the file.

For example, a file with the following entries would

- Add the brand new listed symbol ABCD
- Restate the currently listed symbol BBBB

- Change the endDate for symbol CCCC
- Transfer ownership of symbol DDDD

```
{
  "type": "ASE",
  "listingParticipant": "Exch1",
  "issueType": "NMS",
  "symbol": "ABCD",
  "beginDate": 20170101,
  "endDate": 99991231,
  "companyName": "The Absolute Best Company Description",
  "lotSize": 100,
  "IPO": false,
  "test": false,
  "attributes": "TPG=TG1"
}
{
  "type": "SMRST",
  "listingParticipant": "Exch1",
  "issueType": "NMS",
  "symbol": "BBBB",
  "beginDate": 20170101,
  "endDate": 99991231,
  "companyName": "Bob's Big Bad Burgers",
  "lotSize": 100,
  "IPO": false,
  "test": false
}
{
  "type": "USE",
  "expected": {
    "listingParticipant": "Exch1",
    "issueType": "NMS",
    "symbol": "CCCC",
    "beginDate": 20170101,
    "endDate": 99991231,
    "companyName": "Chattanooga Choo Choo Chocolates",
    "lotSize": 100,
    "IPO": false,
    "test": false
  },
  "update": {
    "endDate": 20170515
  }
}
{
  "type": "SMXFR",
  "ownershipDate": 20170214,
  "ownershipParticipant": "Exch4",
  "ownershipSymbol": "D",
  "listingParticipant": "Exch1",
  "issueType": "NMS",
  "symbol": "DDDD",
  "effectiveDate": 20170525
}
```

2.2.6. Query the Master List

After each file upload, the entire contents of the symbol master database will be sent as feedback. Thus, submitting a symbol master file with zero records would result in a feedback file with the current database contents.

2.2.7. CAT Symbol Master

CAT will provide a start-of-day equity master symbol list at 6:00AM each day. The same master list can be obtained by querying the web API. If modifications to the list are reported during the day (possibly due to corrections or missed additions), the downloadable master list will be updated throughout the day to reflect any such changes. Each file will be named according to the following pattern:

EquityMaster_<YYYYMMDDHHMMSS>.json, where YYYYMMDDHHMMSS is the date and time that the file was created. The most recent file for the day will also be accessible via the name EquityMaster_<YYYYMMDD>.json.

Each listing participant is expected to have made appropriate updates to the CAT symbol master database by 4:00AM. If such changes have not been made, a ticket must be entered with the CAT help desk so CAT and the SRO can initiate appropriate steps to resolve any issues in time for delivering the master list by 6:00AM.

The symbol master file made available to participants will contain all fields for each entry. In particular, it will contain three different record types: Symbol Master Listings, Pending Transfers, and Applied Transfers. Here are examples of each.

```
{
  "type": "SM", "catSymbolID": 12345,
  "listingParticipant": "Exch1", "issueType": "NMS",
  "symbol": "ABCD", "beginDate": "2017-01-01", "endDate": "9999-12-31",
  "companyName": "The Absolute Best Company Description",
  "test": false, "lotSize": 100, "IPO": false, "attributes": "TPG=TG1"
}
{
  "type": "PXFR", "catSymbolID": 11111,
  "listingParticipant": "Exch1", "ownershipDate": 20170214,
  "ownershipParticipant": "Exch4", "ownershipSymbol": "X",
  "listingParticipant": "Exch1", "issueType": "NMS",
  "symbol": "XXXX", "effectiveDate": 20170525
}
{
  "type": "AXFR", "catSymbolID": 22222,
  "listingParticipant": "Exch1", "ownershipDate": 20170214,
  "ownershipParticipant": "Exch4", "ownershipSymbol": "Y",
  "listingParticipant": "Exch1", "issueType": "NMS",
  "symbol": "YYYY", "effectiveDate": 20170522,
  "dateApplied": 20170521
}
```

}

The symbol master file made available to industry members will only contain basic information for each symbol in the database: the listing exchange, the symbol in the symbology of the listing exchange, and a flag indicating whether the symbol is a test symbol.

2.2.8. Daily Symbol Dictionary

Most symbols are known universally as the same symbol name. However, some symbols have different kinds of extensions, and are represented differently by different venues. For example, a symbol listed on NYSE as FOO.A could be known elsewhere as FOO/A, FOO A, FOOA, or possibly some other symbology. Different agencies (and CAT reporters) use different symbology formats for internal distribution and generating external reports.

CAT processes symbols in the symbology of the listing exchange. Thus, in the previous example, the only symbol accepted by CAT would be FOO.A. If a reporter uses a different symbology internally, each of those symbols will have to be converted to the symbology of the listing exchange.

However, to help ease reporting, each reporter can upload a symbol dictionary that allows the reporter to report symbols in whatever symbology is used internally. This means that symbol conversion only has to occur once - in the symbol dictionary - rather than in every reportable event.

For example, assume an exchange receives an order for a symbol in the symbology `ABC.B`, and then routes it to an away exchange, but the away exchange requires the symbol to be represented as `ABC B`. This exchange would have to process its routing logs to convert each use of `ABC B` to `ABC.B`. However, if it loaded a symbol dictionary with a set of aliases, then it could report events with both `ABC.B` and `ABC B` and CAT would determine that they meant the same thing.

Note that the symbol dictionary is completely optional. If each symbol will be reported in all events in its native symbology, then the reporter would not need to upload a symbol dictionary.

Table 10: Symbol Dictionary Entry

Field Name	Data Type	Description	Include Key
type	Message Type	SDE	R
reporter	Reporter ID	The unique identifier assigned to the reporter by CAT	R
listedSymbol	Symbol	The symbol in the symbology of the listing exchange	R
listingParticipant	Participant ID	The listing exchange for the symbol	R
symbolAliases	Array of Symbol	A list of aliases for the listed symbol. The aliases are good for any file submitted to CAT from this reporter	R

Field Name	Data Type	Description	Include Key
	Alias	on the same trading day.	

In the following example, the reporter (MYID) has three internal mappings for the symbol FOO.A: an internal symbol number (345), and two different symbology values (FOO/A and "FOO A").

```
{
  "type": "SDE",
  "reporter": "MYID",
  "listedSymbol": "FOO.A",
  "listingParticipant": "Exch2",
  "symbolAliases": [ "FOO/A", "345", "FOO A" ]
}
```

Thus, in reports submitted from this reporter, any events that reported a symbol using symbology FOO.A, 345, FOO A, or FOO/A would all reference the same actual symbol, namely FOO.A, listed by participant Exch2.

The symbol dictionary is uploaded as a file of newline delimited JSON objects.

2.2.9. Corporate Actions

Similar to equity symbols or option dictionary entries, corporate actions for equities are reported to CAT on a daily basis. Details for corporate actions impacting listed options will be retrieved from the Options Clearing Corporation ("OCC"). An entry must be uploaded for each known corporate action every day by the listing exchange of the affected symbol. SROs must report an entry for a corporate action every day from its declared date through its effective or payment date. For example, if a dividend is declared on Dec 1, 2016 with a payment date on Aug 8, 2017, then an entry must be uploaded to CAT for that dividend every day within that period. Entries for the current trading day must be submitted every day before 4:00 AM Eastern. For dually-listed securities, an entry must be uploaded by each of the listing exchanges.

CAT will accept corporate action entry reporting in the format of each SRO. SROs may use their existing CSV file formats for uploading corporate actions entries to CAT. CAT considers corporate actions to be reportable daily beginning with their declared date through their effective, payment, or cancel date. Some examples:

- Cash Dividend
- Stock Dividend
- Stock Split
- Reverse Stock Split
- Rights Issue

- Warrants Issue
- Spin-Off
- Delisting
- Name Change
- New Listing
- Symbol Change
- Share Issue

In addition to daily corporate actions lists, some exchanges also publish supplementary intra-day reports on these corporate actions. CAT only requires that daily entries be uploaded for each known corporate action.

Exchanges also publish cancellations of known corporate actions to their daily lists. These entries are reportable as well to CAT and should be reported within the same 4:00AM Eastern deadline for a given trading day.

SRO-specific CSV formats for daily corporate action entries are included in this document in Appendix C. These are the CSV formats known to CAT. CAT must be alerted to any change in these formats at least 30 days in advance of the change taking affect, and changes to the CSV format must also be propagated to this document.

2.3. Options Dictionary

Naming conventions for options can vary among exchanges and trading firms. To reduce confusion and simplify reporting, CAT allows reporters to submit options reports using a unique ID of type Text(40), as defined by the reporter, for each option. However, each reporter must upload a dictionary every day for which it reports option quote/order events. The dictionary is valid only for events reported on the same business day.

The options dictionary shall include simple option entries and complex option entries, to cover all options utilized in any report submitted to CAT by that reporter on a given date. This file is composed of a series of dictionary entries for each option, with the Option ID that will be used by the reporter for all option reports done on that day.

Each Option ID defined in the dictionary must be unique for that reporter on that day, across all simple and complex options. As for reportable order events, Options Dictionary entries can be uploaded throughout the day. When uploaded files are processed, symbol dictionary files and option dictionary files are processed before any order event files for the same uploaded timeframe. Entries can be added dynamically throughout the day.

Note that this is not the product definition, but a universal way to reference an options product for the purposes of reporting order events to CAT.

While the Options Dictionary is necessary to process plan participant data, the Processor uses Options Clearing Corporation (OCC) files to generate the Start of Day and End of Day Options Symbol Master files available to support reporting by Industry Members. In the event an exchange supports options products that are not available in the OCC data set (e.g., FLEXPCT products), CAT requests that the exchange submit those products to CAT by 6 p.m. on T+0, for inclusion in the End of Day Options files for industry member reporting.

The options dictionary is uploaded as a file of newline delimited JSON objects.

2.3.1. Option Series Dictionary Entry

The dictionary mapping for an option series (i.e., flex or simple) will contain the information provided in Table 11, which allows options events to be reported using the Option ID reported in the dictionary entry.

Table 11: Simple Option Series Dictionary Entries

Field Name	Data Type	Description	Include Key
type	Message Type	OSDE	R
reporter	Reporter ID	The unique identifier assigned to the reporter by CAT	R
optionID	Text (40)	The unique ID assigned to this option by this reporter. No other simple/complex/flex option should receive the same ID. All reports from this reporter will use this ID to reference a particular option product	R
kind	Choice	Standard, Non-Standard, FLEX, FLEXPCT (strike price and order price are in percentages)	R
optionsSymbol	Text (14)	The option class or symbol for the series (as known by OCC)	R
primaryDeliverable	Symbol	The symbol for the primary deliverable component of the option, in the symbology of the listing exchange for that symbol. Alternatively, if a symbol dictionary is provided, a valid alias could be used	R
underlyingType	Choice	Equity, Index	R
expirationDate	Date	The date that the contract will expire	R
strikePrice	Numeric(10,8)	The dollar and decimal value of the strike price. If option kind = FLEXPCT, this will be the percentage	R
putCall	Choice	Put or Call	R
exerciseStyle	Choice	American or European	R
settlement	Choice	AM, PM, Asian, Cliquet	R

For example, the following dictionary entry would be for the January 19, 2018 150.0 Put for BRK class B. Note that the primary deliverable is reported in NYSE symbology because BRK.B is listed on NYSE.

```
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "12345",
  "kind": "Standard",
  "optionsSymbol": "BRKB",
  "primaryDeliverable": "BRK.B",
  "underlyingType": "Equity",
  "expirationDate": 20180119,
  "strikePrice": 150.00,
  "putCall": "Put",
  "exerciseStyle": "American",
  "settlement": "PM"
}
```

2.3.2. Option Symbol Changes

Changes to symbols stemming from corporate actions can be handled by reporters using Dictionary Entries. Each options exchange should ensure that on the effective date for a corporate action, its Dictionary Entries accurately reflect option symbols with the appropriate numerical suffix when applicable, and it includes any new option symbols created as the result of the corporate action. A detailed corporate action example follows:

Stock ABCD undergoes a 2 for 1 stock split on June 1, 2018. All strike prices are halved, the deliverable remains 100 and the symbol is unchanged. On August 1, 2018 stock ABCD spins off company EFGH, 10 shares per 100 ABCD owned. On the market opening at ex-date all open interest in ABCD corp. is moved to symbol ABCD1 delivering 100 shares of ABCD and 10 shares of EFGH. Option symbol ABCD1 = 100 ABCD + 10 EFGH. Subsequently, ABCD and EFGH shares are each listed in the underlying cash market and their prices are used in the valuation of options ABCD1 respectively. The options exchanges list new option contracts for each underlying that deliver 100 shares using symbols ABCD and EFGH (assuming listing criteria is met). Options symbols ABCD and EFGH begin trading (independently) and each delivers 100 shares of the corresponding stock upon exercise. On November 1, 2018 ABCD undergoes a 3 for 2 stock split. Option contracts in ABCD and ABCD1 are affected. Contracts in ABCD become ABCD2 delivering 150 shares of underlying stock ABCD. Option symbol ABCD2 = 150 ABCD. Contracts in ABCD1 remain ABCD1 and deliver 150 shares ABCD and 10 shares EFGH. Option symbol ABCD1 = 150 ABCD + 10 EFGH. The exchange will again list a new ABCD delivering 100 shares of ABCD stock upon exercise.

Considering the example above, the two entries below demonstrate the values before and after the first corporate action event:

Stock ABCD undergoes a 2 for 1 stock split on June 1, 2018. All strike prices are halved, the deliverable remains 100 and the symbol is unchanged.

Before 2:1 Stock Split on June 1, 2018

```
"type": "OSDE",
"reporter": "MYID",
"optionID": "4322",
"kind": "Standard",
"optionSymbol": "ABCD",
"primaryDeliverable": "ABCD",
"underlyingType": "Equity",
"expirationDate": 20181221,
"strikePrice": 45.00,
"putCall": "Call",
"exerciseStyle": "American",
"settlement": "PM"
}
```

After 2:1 Stock Split on June 1, 2018

```
{
"type": "OSDE",
"reporter": "MYID",
"optionID": "4322",
"kind": "Standard",
"optionsSymbol": "ABCD",
"primaryDeliverable": "ABCD",
"underlyingType": "Equity",
"expirationDate": 20181221,
"strikePrice": 22.50,
"putCall": "Call",
"exerciseStyle": "American",
"settlement": "PM"
}
```

The next entries demonstrate the impact of the second corporate action event – the spinoff on August 1, 2018.

On August 1, 2018 stock ABCD spins off company EFGH, 10 shares per 100 ABCD owned. On the market opening at ex-date all open interest in ABCD corp. is moved to symbol ABCD1 delivering 100 shares of ABCD and 10 shares of EFGH. Option symbol ABCD1 = 100 ABCD + 10 EFGH. Subsequently, ABCD and EFGH shares are each listed in the underlying cash market and their prices are used in the valuation of options ABCD1 respectively. The options exchanges list new option contracts for each underlying that deliver 100 shares using symbols ABCD and EFGH (assuming listing criteria is met). Options symbols ABCD and

EFGH begin trading (independently) and each delivers 100 shares of the corresponding stock upon exercise.

Before Spinoff - Note that at this time, EFGH is still part of ABCD.

```
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "4322",
  "kind": "Standard",
  "optionSymbol": "ABCD",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 45.00,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
```

After Spinoff – three Dictionary Entries would now be reported as the result of this corporate action:

```
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "4322",
  "kind": "Non-Standard",
  "optionsSymbol": "ABCD1",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 22.50,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "99123",
  "kind": "Standard",
  "optionsSymbol": "EFGH",
  "primaryDeliverable": "EFGH",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 5.00,
  "type": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": 99124,
```

```

"kind": "Standard",
"optionsSymbol": "ABCD",
"primaryDeliverable": "ABCD",
"underlyingType": "Equity",
"expirationDate": 20181221,
"strikePrice": 17.50,
"putCall": "Call",
"exerciseStyle": "American",
"settlement": "PM"
}

```

The pre- and post-Spinoff JSON Dictionary Entries shown above are also shown in table format below.

Table 12: Pre- and Post-Spinoff JSON Dictionary Entries

Field Name	Pre-Spinoff Value	Post-Spinoff		
		Entry #1 Value	Entry #2 Value	Entry #3 Value
Exchange ID	CBOE	CBOE	CBOE	CBOE
Option ID	4322	4322	99123 (new unique id)	99124 (new unique id)
Option Kind	Standard	Non-standard	Standard	Standard
Underlying Type	Equity	Equity	Equity	Equity
Primary Deliverable	ABCD	ABCD	EFGH	ABCD
Option Symbol	ABCD or ABCD181221C00022500 <i>Note: EFGH is still part of parent company ABCD</i>	ABCD1 or ABCD181221C00022500 <i>Note: Delivery components of ABCD1 include 10 shares of EFGH. CAT will know this since ABCD1 is the symbol used by OCC.</i>	EFGH or EFGH81221C00005000 <i>Note: This a new standard option as of Aug 1, 2018 which delivers 100 shares of the new standalone company EFGH. Investors will price the underlying and the options accordingly.</i>	ABCD or ABCD181221C00017000 <i>Note: This is a new standard option as of Aug 1 2018, which delivers 100 shares of the parent company ABCD that remains after EFGH was spun off. Investors will price the underlying and the options accordingly.</i>
Expiration Date	20181221	20181221	20181221	20181221
Option Put/Call Code	C	C	C	C

Field Name	Pre-Spinoff Value	Post-Spinoff		
		Entry #1 Value	Entry #2 Value	Entry #3 Value
Strike Price	22.50	22.50	5.00	17.50
Exercise Style	American	American	American	American
Settlement	PM	PM	PM	PM

A final example demonstrates the impact of the third corporate action event – the stock split on November 1, 2018.

On November 1, 2018 ABCD undergoes a 3 for 2 stock split. Option contracts in ABCD and ABCD1 are affected. Contracts in ABCD become ABCD2 delivering 150 shares of underlying stock ABCD. Option symbol ABCD2 = 150 ABCD. Contracts in ABCD1 remain ABCD1 and deliver 150 shares ABCD and 10 shares EFGH. Option symbol ABCD1 = 150 ABCD + 10 EFGH. The exchange will again list a new ABCD delivering 100 shares of ABCD stock upon exercise.

Before 3:2 Stock Split -- ABCD delivers 100 shares of ABCD. ABCD1 options deliver 100 shares of ABCD + 10 shares EFGH.

```
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "4322",
  "kind": "Non-Standard",
  "optionsSymbol": "ABCD1",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 22.50,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "99124",
  "kind": "Standard",
  "optionsSymbol": "ABCD",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 22.50,
  "putCall": "Call",
```

```

"exerciseStyle": "American",
"settlement": "PM"
}

```

After 3:2 Stock Split - ABCD becomes ABCD2 and delivers 150 shares of ABCD. Symbol ABCD1 remains, though now delivers 150 shares ABCD and 10 shares EFGH. The exchange lists new, standard ABCD options that deliver 100 shares of ABCD.

```

{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "4322",
  "kind": "Non-Standard",
  "optionsSymbol": "ABCD1",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 22.50,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": "99124",
  "kind": "Non-Standard",
  "optionsSymbol": "ABCD2",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 22.50,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}
{
  "type": "OSDE",
  "reporter": "MYID",
  "optionID": 100501,
  "kind": "Standard",
  "optionsSymbol": "ABCD",
  "primaryDeliverable": "ABCD",
  "underlyingType": "Equity",
  "expirationDate": 20181221,
  "strikePrice": 15.00,
  "putCall": "Call",
  "exerciseStyle": "American",
  "settlement": "PM"
}

```

2.3.3. Complex Option Dictionary Entry

The dictionary mapping for a complex option will contain the information presented in Table 13. Each complex option can contain multiple legs, where each leg is either an option leg or a stock leg (stock leg will generically refer to equity/exchange-traded fund "ETF").

Table 13: Complex Option Dictionary Entries

Field Name		Data Type	Description	Include Key
type		Message Type	CODE	R
reporter		Reporter ID	The unique identifier assigned to the reporter by CAT	R
optionID		Text (40)	The unique ID assigned to this option by this reporter. No other simple/complex/flex option should receive the same ID. All reports from this reporter will use this ID to reference a particular option product	R
kind		Choice	Complex	R
groupID		Text (40)	An identifier supplied by the user/reporter, to be associated with this entry. The value of the field is not checked by CAT, but it will be stored, and can be used to search for dictionary entries that have the same value	O
Legs	legType	Choice	The leg type of the order: See entry for "legType" in the Data Dictionary for acceptable values	R
	side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
	ratio	Unsigned	The ratio quantity for this leg, relative to the other legs. For option legs, the ratios must already be reduced to the smallest units possible	R
	optionID	Text (40)	The ID of the option - for option legs only . Note that the Option ID for the leg must have already been uploaded before using it in the definition of a complex option. Furthermore, the combination of Option ID / Side must be unique among all legs	C
	symbol	Symbol	The symbol of the equity, in the symbology of the listing exchange - for equity legs only . The same symbol must not appear in more than one leg. Multiple symbol legs are only allowed for index options only	C

The Option ID must be unique. Duplicate dictionary entries are ignored. Entries that have the same Option ID, but different details are rejected. Any entry which defines the opposite side of an existing entry will be rejected. For example, a complex option dictionary entry to Buy one (1) contract of option 1234

and Sell two (2) contracts of option 4321 is considered to be the "opposite side" of an entry to Sell one (1) contract of option 1234 and Buy two (2) contracts of 4321. Thus, if both were submitted the second would be rejected.

JSON Example

```
{
  "type": "CODE",
  "reporter": "MYID",
  "kind": "Complex",
  "optionID": "98765",
  "legs": [
    {
      "legType": "Option",
      "side": "Buy",
      "ratio": 1,
      "optionID": "121345"
    },
    {
      "legType": "Equity",
      "side": "Buy",
      "ratio": 100,
      "symbol": "ABCD"
    }
  ]
}
```

JSON Example of reject

```
{
  "type": "CODE", "reporter": "MYID", "kind": "Complex",
  "optionID": "98765",
  "legs": [
    { "legType": "Option", "side": "Buy",
      "ratio": 1, "optionID": "121345"
    },
    { "legType": "Option", "side": "Sell",
      "ratio": 2, "optionID": "99999"
    }
  ]
}

{
  "type": "CODE", "reporter": "MYID", "kind": "Complex",
  "optionID": "56789",
  "legs": [
    { "legType": "Option", "side": "Sell",
      "ratio": 1, "optionID": "121345"
    },
    { "legType": "Option", "side": "Buy",
      "ratio": 2, "optionID": "99999"
    }
  ]
}
```

2.4. Market Maker Information

Each Equity SRO must submit to CAT a directory of information that lists industry member with which it has a reporting relationship and where the member makes a market in one or more equity symbols. Each Market Maker Dictionary entry identifies a specific industry member, symbol, market maker type, status and status time. The Market Maker may make a market in one or more symbols.

The Market Maker dictionary is loaded each day, and the data values only apply to that trading day. The Market Makers, their assigned Symbols, Market Maker Type, and Status may change on subsequent trading days.

The Market Maker Dictionary will be uploaded as a file of newline-delimited JSON objects, one object per Market Maker entry. The Market Maker dictionary must be uploaded to CAT no later than t+0 at 6:00AM Eastern. Note that this is a same-day upload requirement whereas order events are required to be reported by 8:00AM Eastern the following trading day.

At this time, Market Maker information as defined here is submitted only by Equities exchanges that submit their data using these CAT-defined specifications. This event is not intended for us by Options exchanges or by Equities exchanges that submit data via RSA feeds.

Table 14: Market Maker Dictionary Entry

Field Name	Data Type	Description	Include Key
type	Message Type	MMDE	R
reporter	Reporter ID	The unique identifier assigned to the reporter by CAT	R
marketMaker	Member Alias	Identifier assigned to a member by the SRO as provided in the Member Dictionary	R
symbol	Symbol	Equity Symbol in listing market format, in which the Market Maker is registered on the exchange	R
marketMakerType	Market Maker Type	A list of exchange defined values for the Equity Market Maker distinguishing between types or designations of market makers. This field must be always populated, and the default value is "MM".	R
marketMakerStatus	Choice	The status of the member/symbol for the reporting date. For details, see the Data Dictionary entry for Status Allowed Values Active Market Maker becomes active in the symbol Inactive Market Maker has become inactive in the symbol	R

Field Name	Data Type	Description	Include Key
statusTime	Timestamp	Time of change in market maker's status. If one record for a member alias and symbol combination is provided, it is assumed to be active for the entire day. For market making initiations not at the open, provide the start time.	R
definedMMDEData	Name/value Pair	A list of key/value pairs, providing machine parseable exchange specific regulatory context data for the Equity Market Maker. The attributes must be defined in this specification. See the Defined EMM Data entry in the Data Dictionary for allowable values.	O

The following example shows a Market Maker for exchange Exch1 where the first entry represents an industry member with one active symbol and another inactive.

```
{
  "type": "MMDE",
  "reporter": "Exch1",
  "marketMaker": "ABCD",
  "symbol": "PZ",
  "marketMakerType": "MM",
  "status": "Active",
  "statusTime": "20200714022015.123456789"
}
{
  "type": "MMDE",
  "reporter": "Exch1",
  "marketMaker": "ABCD",
  "symbol": "PX",
  "marketMakerType": "MM",
  "status": "Inactive",
  "statusTime": "20200714022216.123456789"
}
```

3. Special Data Elements and Common Events

This section describes data elements that are common to most order events, including timestamps, sequence numbers, symbols, material terms of an order, and elements used during the CAT process of creating order lifecycles.

Events that are universal, or common, are also described in this section.

3.1. Timestamps and Sequence Numbers

All order events from a given reporter contain a timestamp. Timestamps are required to be reported in the greatest granularity in use by the reporter's trading platform, up to nanoseconds. The timestamp should uniquely sequence every event. However, if the granularity of the reported timestamp is insufficient, multiple events could have the same timestamp. This means that there is no way to confidently sequence those events by timestamp. Thus, if it is possible for multiple events to have the same timestamp (from the same reporter, on the same day, in the same symbol), then an event sequence number must also be attached to each event. The sequence number is required to be strictly increasing, and must guarantee proper sequencing of events in the order in which they originally occurred (sequence number requirement is by reporter, date, and symbol).

The sequence number does not help sequence events across multiple reporters with the same timestamp, but it does assist sequencing events from a given reporter. Note that the sequence number may be globally unique, in which case it provides sequencing unilaterally. However, this is not required. The main requirement of the sequence number is that it provide sequencing between events from the same reporter, on the same date, in the same symbol, with the same reported timestamp.

If the timestamp of a given event provides the ability to order within reporter/date/symbol, the Event Sequence Number does not have to be reported.

3.1.1. Sequence Number Subsystems

The purpose of the sequence number is to allow regulators to sequence multiple events that have the same timestamp. However, reports for the same reporter/date/symbol may originate from multiple systems, and it may be difficult to coordinate a sequence number that is unique among all subsystems.

In such cases, a sequence number subsystem (`seqNumSub`) can be optionally reported along with the sequence number. This value can be examined to better determine ordering characteristics of the events that have the same timestamp value.

3.1.2. Time of Order Receipt

The time of order receipt is the time at which an exchange Participant assigns an Order-ID to an incoming message.

3.2. Symbolology

When reporting events for equities, the symbol must be reported in the symbolology of the listing exchange. Optionally, the reporter can submit their reports using an alternate symbolology, provided that a symbol dictionary is uploaded to CAT each day. Thus, any time a symbol is reported, it is always required to be in the symbolology of the listing exchange, or to be a valid symbol dictionary alias.

Any reporter who reports options events must submit an option dictionary to CAT. All options are identified using the Option ID, as provided to CAT in the reporter's option dictionary.

3.3. NBBO

The NBBO is provided with each relevant order event (i.e., when available). This is the NBBO from the perspective of the reporter at the time of the event, but not including the effect that the event would have on the NBBO. For example, if the NBBO were 100@10.10 x 100@10.15, and a new order arrived at the exchange to BUY 100@10.10, the reported NBBO would be 100@10.10 x 100@10.15, even though the immediate effect of the order would be to change the best bid to 200@10.10.

Note that the bid/ask prices are required, but the quantities being bid or offered are optional.

There exist some special cases where the NBBO is unavailable or nonexistent. In those cases, the NBBO values should be reported with a zero price and zero quantity. An entry with both the price and quantity of zero will indicate that the data was either unavailable or not applicable for that particular event. Note that the values can't just be reported as unavailable because it is hard to acquire them. They must truly be unavailable or not applicable to that particular event.

3.4. Order Linkage and Lifecycle

When all members have submitted their reports to CAT for a given trading day, CAT will link all reportable events to create a complete lifecycle of each order. A key part of being able to connect the orders is recognizing and connecting the daisy chain of orders across all CAT reporters. In order to accomplish this, both the reporter routing an order away and the reporter accepting the order must report the exact same details about the order.

Of particular interest to reporting participants, the data elements important to creating cross-reporter order linkages are: Exchange ID, Date, Symbol/Option, Routing Party, Routed Order ID, and Session ID.

When an order is routed to an exchange, each communication protocol specifies a way to uniquely identify that order (e.g., FIX protocol calls it ClOrdId, OUCH calls it Order Token). However, the uniqueness guarantees differ from protocol to protocol. Some exchanges may assign a unique Member Alias for each account, and require uniqueness based on the account ID and order ID alone. Others may issue special identifiers for each API session that the member uses to connect into the exchange. Since there is no universally accepted method, CAT uses a combination of several different attributes that provide flexibility in ensuring globally unique order IDs across all known supported protocols.

Both the routing firm — once industry member reporting has commenced — and the exchange will submit information to CAT in their Order Route and Order Accepted reports. Note that exchange and industry member Routed Order ID, Routing Party, and Session ID must exactly match between in order for CAT to accomplish the linkage process.

The Routed Order ID is the unique order identifier sent in the API message going from the routing entity to the destination entity.

The Routing Party is a text string that the exchange has assigned to the firm routing the order. Complexity arises when a member is assigned multiple values by the exchange. The determination as to which value is used by both parties depends on protocol-specific information. The text string can be a Member Alias, but there is no restriction that it must be a Member Alias. It can be any string, so long as both the sender of the order and the exchange agree on using the same string for their orders.

The Session ID is also exchange-assigned, usually a unique login account, an actual protocol session name, IP/port combination, or some other means of identifying a particular API session. The Session ID identifies the specific session used to route the order. Even in cases where there is only one session in use between reporters, the same non-empty value must be reported in the session field by both parties.

CAT, in cooperation with each exchange, shall determine how the Routing Party, Routed Order ID, and Session ID are derived for each API supported by the exchange. This guidance will be documented and published on the CAT website.

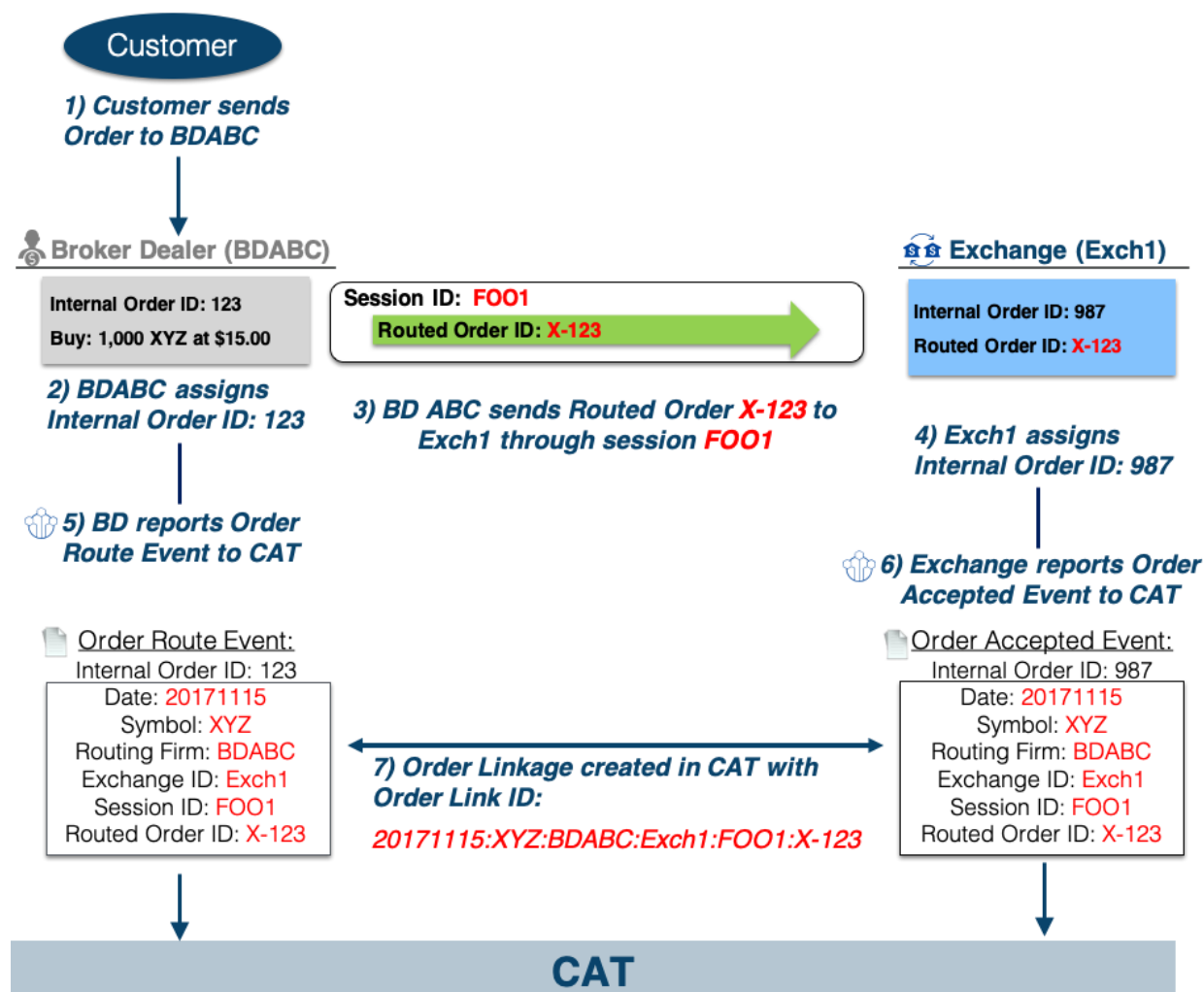


Figure 2: Order Linkage and Lifecycle

3.5. Material Terms of an Order

The material terms of an order include but are not limited to price, quantity, side, order type, open/close indicator (for options), time in force, and special handling instructions. Each order event includes fields for each of these.

However, each exchange offers significant distinguishing features and instructions to describe how orders are to be handled. These differences are mainly captured in the possible values for the order type and any special handling instructions. The CAT system is generally agnostic to these values, and their primary utility is in how they are interpreted and used in surveillance activities.

In order to provide utility in using the reported data for surveillance purposes, both the reporters and the users must have well known definitions of the data being reported. In addition, without specific

definitions, the submitted data cannot be checked for integrity in those fields that comprise the material terms of an order. Thus, every possible value for each field must be explicitly defined both in this specification and the separate specification document for industry members¹. Every value that could possibly be reported must be well-defined in the technical specifications. CAT maintains the technical specifications for both the participants and industry members to reflect changes to order types and/or handling instructions over time. Each exchange must provide guidance to CAT on how these values are determined for each of their system interfaces, with lead time sufficient to allow CAT to update the specifications for both participants and industry members.

3.5.1. Order Types

The Order Type for each order must be assigned with exactly one value from a predefined set of choices. These choices are documented in the data dictionary entry for Order Type (see Appendix F). CAT, in cooperation with each exchange, has defined a list of acceptable values for this field, however additional order types may be added to accommodate future market needs.

The CAT website contains guidance on how these choices can be determined for each exchange API.

3.5.2. Order Handling Instructions

The Handling Instructions field defines special instructions as to how the order should be handled by the exchange. Neither SEC Rule 613, nor the CAT NMS Plan dictate the special handling instructions that must be supported. Furthermore, each exchange may use different names and values to describe how orders are handled, and there can be numerous customized special handling instructions. While the CAT processor must be able to support any instructions which are required to be reported, mandating specific instructions is beyond the scope of the CAT processor as that information is only known by the exchanges and the appropriate surveillance and regulatory entities. Thus, the allowed values for this field support a wide array of special handling instructions. Order Handling Instructions' values must be documented in the data dictionary of this technical specification, and guidance must be provided to CAT by reporters for how these values can be determined based on each exchange API. Guidance will be subsequently posted on the CAT website.

The Handling Instructions field can specify as many special handling instructions as apply for that order (or be empty if no such instructions apply). Thus, the handling instructions field will be a list of name/value pair.

¹ Industry Members must also report the material terms of the order on their route reports

Note that the full intent of the order is reportable to CAT. At a minimum, every term and/or instruction for an order that is communicated to the exchange must be reported to CAT. It can be reported as part of the standard set of material terms, or via one of the defined name/value pairs as defined in the Handling Instructions section of the Data Dictionary. Reporters cannot choose which order instructions to report: they must report every instruction applicable to each order.

Note that the Order Handling Instructions field is marked as 'conditionally required' in the event definitions, because its existence is not enforced by the system. If the order does not have any characteristics that are reportable to CAT, then the field does not have to be provided. However, if there are any explicit or implied handling instructions for the order, then this effectively becomes a required field, as all instructions must be reported.

For example, assume two hypothetical handling instructions: AON and WDS=<percent>; where AON means all-or-none and WDS means a discretion price is allowed to be less than or equal to some percentage of the spread. If an order were to be placed as all-or-none, with a discretion of up to 50 percent of the spread, then the Order Handling Instructions field would contain "AON | WDS=50" as its value.

This approach provides flexibility for exchanges, enabling them to represent a wide array of handling instructions, while also enabling CAT to validate submitted data and providing regulators a defined structure for interpretation of the data.

3.6. Optional, Required, and Conditional Fields

Subsequent sections describe event types and their fields. Each field will be notated with the abbreviation R, O, C, or r to represent whether it is required, optional, conditional, or required conditionally. This codification will be present in the last column of each table describing an event.

Table 15: Optional, Required and Conditional Fields

Type	Abbreviation	Description
Required	R	Required for the event, must always be included. For example, the field "type" is always required.
Optional	O	Optional for the event, may be included at the discretion of the reporter
Conditional	C	Conditional fields may be required depending on the contents of the event. For example: in the note event, quoteID and orderID are conditional fields. If the note event is on a quote, then quoteID is required, if the note event is on an order, then orderID is required
Required Conditionally	r	This is a special category of fields that currently applies to options only. Specifically, fields marked as 'r' are required if the event applies to a simple option order, but they are conditional if the event applies to an

Type	Abbreviation	Description
		option order that is part of a complex order

3.7. Common Events

3.7.1. Note Event

The Note Event is a generic event that accommodates reporting for events that are not defined with explicit events. For example, there could be certain events that occur in the process of handling an order on the floor of an exchange that may be desired to be included in the trail of events for a particular order, but don't fit into an explicitly defined reportable event. In another example, there could be a certain process that the order goes through as part of its handling that does not constitute a change in terms of the order, but may be beneficial as part of the order's audit trail.

The Note event requires either an Order ID or a Quote ID (but not both), so that the notation can be appropriately linked by CAT to the associated order/quote. If the note relates to a stock order, then both orderID and symbol are required. If the note relates to an option order/quote then both optionID and orderID/quoteID are required.

Table 16: Note Event

Field Name	Data Type	Description	Include Key
type	Message Type	NOTE	R
reporter	Reporter ID	The identifier for the reporter that generated the note	R
eventTimestamp	Timestamp	The date/time of the event being noted	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The symbol of order; for a stock order	C
optionID	Text (40)	The ID of the option; for an option order/quote	C
quoteID	Text (40)	The ID of the quote on which the note is being placed, only applicable if the note is related to a quote	C
orderID	Text (40)	The ID of the order on which the note is being placed, only applicable if the note is related to an order	C
noteType	Choice	One of several predefined types of notation events, providing a way to classify or categorize notations. See the data dictionary for allowable values	R

Field Name	Data Type	Description	Include Key
definedNoteData	Name/Value Pairs	A list of key/value pairs, providing machine parseable data for the notation. The attributes must be defined in this specification. See the Defined Note Data entry in the Data Dictionary for allowable values	O
undefinedNoteData	Name/Value Pairs	A list of key/value pairs, providing machine parseable data for the notation. The attributes are not defined in the spec, and can be any values as long as they conform to the format for a list of name/value pairs	O
note	Text (255)	A free-form text field to describe the notation for the event	O

The Note Type and Defined Note Data fields are well-defined and must conform to the permitted values as described in this specification. The Undefined Note Data can accommodate any attributes, as long as the field conforms to the format for a list of name/value pairs.

Thus, Note Events, while generic in nature, can be parsed and evaluated by both humans and computer programs.

Lifecycle keys for this event:

- Order Key: date, reporter, symbol, orderID
- Order Key: date, reporter, optionID, orderID
- Quote Key: date, reporter, optionID, quoteID

3.7.2. Self-Help Declarations

“Self-help” declarations allow market participants to disregard the protected quotations of trading centers that are experiencing systems problems such as failure, material delay, or malfunction.

Participants must report to CAT any self-help declarations they make. If a self-help declaration is carried over to the next day, it must be reported again on that day. The following data is required to be reported for Self-Help declarations:

Table 17: Self-Help Declaration

Field Name	Data Type	Description	Include Key
type	Message Type	SHD	R
reporter	Reporter ID	Identifier of reporter declaring self-help	R
declaredTimestamp	Timestamp	Date and time self-help was declared	C

Field Name	Data Type	Description	Include Key
revokedTimestamp	Timestamp	Date and time self-help was revoked. Self-help declarations must be reported each day. If self-help is not revoked by the end of the day, this field may be left unreported or can be set to the closing time. However, another self-help event must be reported for the next day	C
awayExchange	Exchange ID	Exchange affected by self-help event	R
comments	Text (255)	Comments related to self-help event	O

Both the declared and revoked timestamps can be reported in one single event by including both declaredTimestamp and revokedTimestamp. Alternatively, the declaration and revocation can be reported independently by just including the relevant timestamp in separate events.

3.7.3. Supplemental Trade Event

Each trade event (stock and option) contains some information which may not be readily available when generating the trade event. Thus, an independent event can be submitted to augment the information in the trade event. These events can be submitted in the same file as other events or in a separate file.

These events will not be recorded as separate events in CAT. Rather, the information in these events will be merged with the appropriate trade event to provide data that may have been missing in the original trade event. Currently, only the saleCondition can be reported in this way.

This event is used for stock and option trades. If the trade references a stock, then the symbol field must be provided. If the trade references an option, then the optionID field must be provided.

The description uses "trade" in a general manner. If the event references a trade, the tradeID field is required. If the event references a fill, the fillID and side are required.

Table 18: Supplemental Trade Event

Field Name	Data Type	Description	Include Key
type	Message Type	STE	R
exchange	Exchange ID	The ID of the exchange where the trade took place	R
tradeID	Text (40)	The tradeID from the original trade event	C
fillID	Text (40)	The fillID from the original fill event	C
optionID	Text (40)	The ID of the option being traded	C
symbol	Symbol	The symbol for the stock being traded	C

Field Name	Data Type	Description	Include Key
side	Choice	Side of the executed trade (required when fillID is used)	C
saleCondition	Text (8)	Conditions under which trade was executed	R

Lifecycle keys for this event:

- Trade Key: date, exchange, symbol, tradeID
- Trade Key: date, exchange, optionID, tradeID
- Fill Key: date, exchange, symbol, fillID
- Fill Key: date, exchange, optionID, fillID

4. Events for Stock Exchanges

Within this Technical Specification, events for stock exchanges, options exchanges, and the trade reporting facilities are documented in separate sections. This section describes reportable events for stock exchanges.

Table 19: Events for Stock Exchanges

Sec	Event	Message Type	Description
4.1	Order Accepted	EOA	An Exchange receives and accepts a routed order
4.2	Order Route	EOR	An Exchange routes an order through a routing broker dealer
4.3	Internal Order Route	EIR	An exchange routes an order to another internal subsystem
4.4	Order Modified	EOM	The material terms of an order have been changed
4.5	Order Adjusted	EOJ	A select set of material terms of an order have been changed
4.6	Order Canceled	EOC	An Exchange cancels an order in part or in whole
4.7	Order Trade	EOT	All trades are reported to CAT as two-sided transactions with a single event
4.8	Order Fill	EOF	When a routed order executes, the Exchange reports the fill with the order and the routing firm
4.9	Bulk Print Event	EBP	An exchange matches multiple buy/sell orders in a batch.
4.10	Order Cancel Route	ECR	An exchange initiates a cancel request on an order that it previously routed away.
4.11	Order Modify Route	EMR	An exchange initiates a modify or cancel/replace request on an order it previously routed away
4.12	Order Restatement	EORS	An order that persists across multiple business days is restated each day before any other activity is reported for that symbol
4.13	Trade Break	ETB	A trade is broken
4.14	Trade Correction	ETC	A trade is corrected

4.1. Order Accepted Event

When an exchange receives and accepts a routed order, an Order Accepted event is reported to CAT. If the order is rejected (i.e., not received and successfully processed by the matching engine), then an event is not reported to CAT.

Some systems will outright reject messages if they are malformed or contain a duplicate order ID. Other systems will silently ignore certain malformed messages (e.g., the OUCH protocol specifically states that new orders containing duplicate order tokens are silently ignored). However, all current systems will send some sort of positive acknowledgement when an order has been finally accepted into the system. Some systems will send an acknowledgement from the gateway upon receipt of the request, but the order could still possibly be rejected instead of accepted by the matching engine. Such protocols have a prescribed way of notifying the sender whether or not their order was actually accepted.

The basic rule is that orders rejected by the gateway are not reportable, but any order reaching the matching engine is reportable.

Note that for the order accepted event, the firm that sends the order to the exchange will be referred to as the routing firm. In the next event, order route event (section 4.2), the routing broker dealer will also be referred to as the routing firm.

The Order ID that is used in orders must be globally unique when combined with the date, exchange, symbol and general side, where the general side is either Buy or Sell.

Table 20: Order Accepted

Field Name	Data Type	Description	Include Key
type	Message Type	EOA	R
exchange	Exchange ID	The ID for the exchange which has accepted this order	R
eventTimestamp	Timestamp	The date/time of order receipt	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R

Field Name	Data Type	Description	Include Key
routingParty	Text (20)	The ID string used to identify the entity that routed this order to the exchange	R
routedOrderID	Text (40)	The order ID that the firm used in the API message when they sent the order to the exchange (e.g., in FIX it would be ClOrdId, in OUCH it would be Order Token)	R
session	Text (40)	The ID assigned to the specific session that the routing member used to route the order to the exchange	R
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
displayPrice	Price	The displayed price for this order (required if displayQty is greater than zero)	C
workingPrice	Price	The working price of the order at the time it was accepted. Note that Modified events must be reported to CAT anytime the working price changes.	C
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
capacity	Choice	See entry for "capacity" in the Data Dictionary for acceptable values	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in Data Dictionary for Handling Instructions	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order, that are not necessarily handling instructions	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
nbbPrice	Price	The NBBO at the moment the order was accepted. Prices are required. Quantities are optional	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, symbol, routingParty, routedOrderID, session, exchange
- Cross Order Key: date, exchange, orderID, pairedOrderID (if populated in order attributes name value pair)

4.2. Order Route Event

The following Order Route event is used to report when an exchange routes an order through a routing broker dealer.

When an order is routed, some exchanges create a derived order (with a different order ID), to represent the order being routed away. Others just route the order (or part of the order) straight to the routing broker without changing the Order ID. In either case, CAT must be able to link the internal order on the exchange with the internal order at the routing BD. Thus, both the report from the exchange and the report from the routing BD must have the same identifiers for the routed order. This is very similar to the process described earlier related to the Accepted event.

Note that for an order route event, the routing broker is referred to as the routing firm.

The Order Route event reported by the exchange needs three key pieces of information: the Routing Firm receiving the routed order, the Session ID through which the order is being routed, and the Routed Order ID, which is the order ID sent to the routing firm.

The Routing Firm must be represented by an entry in the exchange's member dictionary (though not necessarily a member of the exchange). Furthermore, as explained in the linkage section, both the exchange and the Routing Firm must know which Member Alias is to be reported to CAT because both will have to report the same Member Alias (the exchange in their Route event, and the firm in their Accepted event). Either both sides must use a constant value, or there must be some way to derive the value being used (via session configurations or in the message itself).

If the exchange creates a derived order, and passes that order ID to the firm via its API, then the Routed Order ID will be the order ID of the derived order. If, however, there is no derived order and the exchange passes its own internal order ID to the routing broker, then the internal order ID will also be assigned as the Routed Order ID. In this case, both the order ID and the routed order ID are populated with the same value.

Table 21: Order Route

Field Name	Data Type	Description	Include Key
type	Message Type	EOR	R
exchange	Exchange ID	The ID for the exchange which is routing this order	R
eventTimestamp	Timestamp	The date/time at which the order was routed	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the entity receiving this routed order. This value must match the value reported by the routing broker in their Order Accepted report	R
routedOrderID	Text (40)	The ID assigned to this order by the exchange when submitting the order to the routing firm. This value must match the value reported by the routing broker in their Order Accepted report	R
session	Text (40)	The ID assigned to the specific session used when sending the order from the exchange to the routing firm.	R
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
capacity	Choice	See entry for "capacity" in the Data Dictionary for acceptable values	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in Data Dictionary for Handling Instructions	C
result	Choice	The result of the route request (e.g. acknowledged, rejected, or no response). See the Data Dictionary for	O

Field Name	Data Type	Description	Include Key
		the list of allowed values	
resultTimestamp	Timestamp	The date/time the result of the request was received, required if the result is ACK (acknowledged) or REJ (rejected)	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R
nbbPrice	Price	The NBBO at the moment the order was routed. Prices are required. Quantities are optional	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, symbol, exchange, routedOrderID, routingParty

4.3. Internal Order Route Event

In some cases, an exchange may have multiple internal subsystems involved in handling orders. In such cases, an order may be accepted by one internal system, and then routed to one or more internal systems for processing. Routes within an exchange are not required to be reported to CAT. However, there are cases where it is difficult for an exchange to report the entire status of an order to CAT when its internal processing is handled on multiple systems. Specifically, ensuring that the events contain the same order identifiers would require substantial post processing.

Thus, an internal route event may be reported to CAT, indicating that an order is being passed from one internal system to another. This will allow CAT to link events that are related to the same order within an exchange, even if the exchange has changed the identifiers on the order as it moves between internal systems.

Table 22: Internal Order Route

Field Name	Data Type	Description	Include Key
type	Message Type	EIR	R
exchange	Exchange ID	The ID for the exchange which is routing this order.	R
eventTimestamp	Timestamp	The date/time at which the order was routed.	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify	C

Field Name	Data Type	Description	Include Key
		the sequence of events when multiple events have the same timestamps.	
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the internal subsystem that is receiving this routed order. This value must match the value reported by the receiving subsystem in the <code>routingParty</code> field of their Order Accepted report	R
routedOrderID	Text (40)	The ID assigned to this order by the exchange when submitting the order to the subsystem. This value must match the value reported by the receiving subsystem in the <code>routedOrderID</code> field of their Order Accepted report	R
session	Text (40)	The ID assigned to the specific session used when sending the order from the sending subsystem to the receiving subsystem. This value must match the value reported by the receiving subsystem in the <code>session</code> field of their Order Accepted report	R
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
capacity	Choice	See entry for "capacity" in the Data Dictionary for acceptable values	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in Data Dictionary for Handling Instructions	C
result	Choice	The result of the route request (e.g. acknowledged, rejected, or no response). See the Data Dictionary for the list of allowed values	O
resultTimestamp	Timestamp	The date/time the result of the request was received, required if the result is ACK (acknowledged) or REJ (rejected)	O

Field Name	Data Type	Description	Include Key
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty

4.4. Order Modified Event

An event must be sent to CAT to report any customer modification to the order. Additionally, an event must be sent to CAT to report any changes to the order due to an exchange action, including updates related to changes in market conditions.

Events that should be reported include, but are not limited to:

- Any customer update that passes validation and is successfully processed by the trading system
- Changes to the available quantity of the order, such as liquidity returning from an away market unexecuted
- Changes to the working price, display price, or display quantity
- Changes to the executability of an order, such as when a regular-hours order arrived prior to the opening time and it is now the opening time or when an order expires and no explicit cancellation is provided

This event supports all possible modifications to an equity order. The full state of the order should be reported, including fields that did not change as a result of the modification.

Table 23: Order Modified

Field Name	Data Type	Description	Include Key
type	Message Type	EOM	R
exchange	Exchange ID	The identifier for the exchange which has modified this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C

Field Name	Data Type	Description	Include Key
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderID	Text (40)	The internal order ID before the modify / replacement created a new order ID. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
nbbPrice	Price	The NBBO at the moment the order was modified. Prices are required. Quantities are optional	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
price	Price	The limit price of the order, if applicable. Note that this is only for reporting limit price modifications. Automated changes to prices (e.g., PEG orders) would be tracked by reporting a difference in the working price. See the PEG example in section 7.5 for exact details	C
quantity	Unsigned	When the initiator field is set to Firm or Market Maker, the order quantity. When the initiator field is set to Exchange, the total quantity available on the local book at the conclusion of the modification.	R
displayQty	Unsigned	The displayed quantity for this order	R
displayPrice	Price	The displayed price for this order	C
workingPrice	Price	The working price of the order	C
leavesQty	Unsigned	The quantity left open after the modification has occurred.	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
capacity	Choice	See entry for Capacity in the Data Dictionary for acceptable values	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in	C

Field Name	Data Type	Description	Include Key
		Data Dictionary for Handling Instructions.	
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order, that are not necessarily handling instructions.	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Except as noted above, not required for exchange-driven modifications.	C
routingParty	Text(20)	For customer-driven changes to the order, the ID string used to identify the entity that routed this order modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID string used to route the order away. Should match the value of the EOR event routingParty with the same routedOrderID. Except as noted above, not required for exchange-driven modifications.	C
session	Text(40)	For customer-driven changes to the order, the ID assigned to the specific session that the routing member used to route the order to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Should match the value of the EOR event session with the same routedOrderID. Except as noted above, not required for exchange-driven modifications.	C

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Previous Order Key: date, exchange, symbol, originalOrderID
- Route Link Key: date, symbol, exchange, routedOrderID, routingParty, session
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)

4.5. Order Adjusted Event

An event must be sent to CAT to report any customer modification to the order. Additionally, an event must be sent to CAT to report any changes to the order due to an exchange action, including updates related to changes in market conditions.

Unlike the EOM, which supports changes to any reportable attribute, the EOM event supports only changes to the side, price, quantity, working price, display price, and display quantity. Side adjustments are only allowed for same-side changes (e.g., changes between short and long sell).

All other order instructions are assumed to be unchanged.

Table 24: Order Adjusted

Field Name	Data Type	Description	Include Key
type	Message Type	EOJ	R
exchange	Exchange ID	The identifier for the exchange which has modified this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderID	Text (40)	The internal order ID before the modify / replacement created a new order ID. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	C
price	Price	The limit price of the order, if it changed.	C
displayPrice	Price	The displayed price for this order	C
workingPrice	Price	The working price of the order	C

Field Name	Data Type	Description	Include Key
quantity	Unsigned	When the initiator field is set to Firm or Market Maker, the order quantity. When the initiator field is set to Exchange, the total quantity available on the local book at the conclusion of the modification.	C
displayQty	Unsigned	The displayed quantity for this order	C
leavesQty	Unsigned	The quantity left open after the modification has occurred.	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
nbbPrice	Price	The NBBO at the moment the order was modified. Prices are required. Quantities are optional.	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away Except as noted above, not required for exchange-driven modifications	C
routingParty	Text(20)	For customer-driven changes to the order, the ID string used to identify the entity that routed this order modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID string used to route the order away. Should match the value of the EOR event routingParty with the same routedOrderID. Except as noted above, not required for exchange-driven modifications.	C
session	Text(40)	For customer-driven changes to the order, the ID assigned to the specific session that the routing member used to route the order to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Should match the value of the EOR event session with the same routedOrderID. Except as noted above, not required for exchange-driven modifications.	C

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Previous Order Key: date, exchange, symbol, originalOrderID
- Route Link Key: date, symbol, exchange, routedOrderID, routingParty, session
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)

4.6. Order Canceled Event

When an exchange cancels an order, in part or in whole, the event must be reported to CAT. Note that an explicit Canceled Event is required for every order that is canceled, even orders that have implicit "execute or cancel" instructions like IOC orders.

A Canceled event should be used anytime any part of an order is canceled. For example, an order can be partially reduced either with a cancel message or a modify (cancel/replace) message. If an actual cancel is processed by the exchange, a Canceled event would be reported. If a modify and/or cancel/replace was sent to the exchange, a Modified event would be reported. This keeps the reported event in line with the original intent.

Some protocols only allow full cancels; partial cancels must be accomplished via a cancel/replace. In such cases, partial cancels would always be reported as Modified events.

Table 25: Order Canceled

Field Name	Data Type	Description	Include Key
type	Message Type	EOC	R
exchange	Exchange ID	The ID for the exchange which has canceled this order.	R
eventTimestamp	Timestamp	The date/time at which the cancellation was received or originated.	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier.	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
cancelQty	Unsigned	The quantity being canceled.	R
leavesQty	Unsigned	The quantity left open after the cancel event (zero for	R

Field Name	Data Type	Description	Include Key
		a full cancel)	
initiator	Choice	Indicates who initiated the order cancellation: See entry for "initiator" in the Data Dictionary for acceptable values	R
cancelReason	Choice	Code representing the reason why the order was canceled. The actual value of the code is exchange specific. See Data Dictionary for the list of allowed values	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID

4.7. Order Trade Event

All trade events are reported to CAT as two-sided transactions, with a single event.

Each order trade event is represented with the following details. The details in the table Order Trade Side Details must be populated for each side of the trade.

Table 26: Order Trade Events

Field Name	Data Type	Description	Include Key
type	Message Type	EOT	R
exchange	Exchange ID	The ID for the exchange on which the trade took place	R
eventTimestamp	Timestamp	The date/time of execution	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
tradeID	Text (40)	This ID will be used when a specific trade needs to be identified, for example in trade break and correction reports. The combination of date, exchange, symbol, and tradeID must be globally unique	R
quantity	Unsigned	Quantity of the trade	R

Field Name	Data Type	Description	Include Key
price	Price	Price of the trade	R
saleCondition	Text (8)	Conditions under which trade was executed	C
executionCodes	Name/Value Pairs	Describes any execution codes, acceptable values are described in Data Dictionary. These codes apply to both sides of the trade	C
buyDetails	Order Trade Side Details	See Order Trade Side Details table	R
sellDetails	Order Trade Side Details	See Order Trade Side Details table	R
nbbPrice	Price	The national best bid price at the moment the trade occurred	R
nbbQty	Unsigned	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	R
nboQty	Unsigned	The national best offer quantity at the moment the trade occurred	O

Table 27: Order Trade Side Details

Field Name	Data Type	Description	Include Key
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
leavesQty	Unsigned	The quantity remaining unfilled after this trade event. Not required when used in a trade correction	C
orderID	Text (40)	The internal order ID for this side of the trade.	R
capacity	Choice	See entry for Capacity in the Data Dictionary for acceptable values	R
clearingNumber	Text (20)	DTCC clearing number for this side of the trade	R
executionCodes	Name/Value Pairs	Describes any execution codes, as described in Data Dictionary for Execution Codes. These codes would only apply only to this side of the trade	C
liquidityCode	Choice	Specifies if this side of the trade was adding or removing liquidity. See entry for liquidityCode in the Data Dictionary for permitted values	R
member	Member Alias	The identifier for the member firm that is responsible for the order on this side of the trade	R
routedOrderID	Text (40)	For events representing an away trade, the exchange-assigned ID used to route the order away.	C

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, buyDetails.orderID
- Order Key: date, exchange, symbol, sellDetails.orderID
Trade Key: date, exchange, symbol, tradeID
- Route Link Key: date, symbol, exchange, buyDetails.routedOrderID
- Route Link Key: date, symbol, exchange, sellDetails.routedOrderID

4.8. Order Fill Event

When a routed order executes, the routing firm acquires the position. The exchange will report the fill with the order on one side, and the routing firm on the other side.

Table 28: Order Fill Event

Field Name	Data Type	Description	Include Key
type	Message Type	EOF	R
exchange	Exchange ID	The ID of the exchange reporting the fill to CAT	R
eventTimestamp	Timestamp	The date/time when the fill was processed by the exchange	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
fillID	Text (40)	A unique identifier for the transaction. The combination of reporter, date, symbol, side, and fillID should be unique	R
symbol	Symbol	The symbol of the stock being filled	R
quantity	Unsigned	Quantity of the fill	R
price	Price	Price of the fill	R
leavesQty	Unsigned	The quantity remaining unfilled after this fill event	R
saleCondition	Text (8)	Conditions under which trade was executed	C
orderID	Text (40)	The internal ID of the order	R
side	Choice	Side of the executed trade: for example Buy, Sell or Short. See the entry 'side' in data dictionary for the list of accepted values	R
clearingNumber	Text (20)	DTCC clearing number for this side of the trade	R

Field Name	Data Type	Description	Include Key
contraClearingNumber	Text (20)	DTCC clearing number for contra side of the trade	R
executionCodes	Name / Value Pairs	Optional. Can include zero or more execution codes, as described in Data Dictionary for Execution Codes. These codes would only apply only to this side of the trade	C
routingParty	Text (20)	The ID string used to identify the entity that received this routed order. This value will be the same as in the Order Route event for the order being filled	R
routedOrderID	Text (40)	The same Order ID that was used when the order was routed away - and will be on the execution report from the routing BD	R
session	Text (40)	The Session ID of the session on which the order was routed to the BD, and will be the same session on which the execution came back from the BD	R
capacity	Choice	See entry for Capacity in the Data Dictionary for acceptable values	R
member	Member Alias	The identifier for the member firm that is responsible for the order being filled	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Fill Key: date, exchange, symbol, fillID
- Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty

4.9. Bulk Print Event

Certain types of executions happen in a batch and not as order-to-order trades (e.g., opening and closing cross). The Bulk Print event is designed to enable reporting of those types of matches.

Each batch execution needs an identifier (bulkPrintID) which is unique for that set of executions, by date, reporter, and symbol. An event will be reported to CAT for every order that participated in the batch execution.

For example, if the opening cross matched 1,000,000 shares of symbol ABCD across 5,000 buy orders and 4,000 sell orders, then there would be 9,000 Bulk Print Event reports sent to CAT for that cross. Each event would contain the same bulkPrintID, which would uniquely identify that particular cross event. The total of all buy-orders execution quantities should be equal to the total of all sell-orders execution quantities (in this example, 1,000,000 shares).

Table 29: Bulk Print Event

Field Name	Data Type	Description	Include Key
type	Message Type	EBP	R
exchange	Exchange ID	The ID of the exchange reporting the trade to CAT	R
eventTimestamp	Timestamp	The date/time when the trade was processed by the exchange	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
bulkPrintID	Text (40)	A unique identifier for the transaction. The combination of reporter, date, symbol, and <code>bulkPrintID</code> should identify a single trade event. All Bulk Print Events with the same <code>bulkPrintID</code> will be considered to be part of the same batch execution	R
symbol	Symbol	The symbol of the stock being traded	R
quantity	Unsigned	Quantity of the trade going to this particular order	R
price	Price	Price of the trade	R
leavesQty	Unsigned	The quantity remaining unfilled after this fill event	R
saleCondition	Text (8)	Conditions under which trade was executed	C
orderID	Text (40)	The internal ID of the order	R
side	Choice	Side of the executed trade: for example Buy, Sell or Short. See the entry 'side' in data dictionary for the list of accepted values	R
clearingNumber	Text (20)	DTCC clearing number for this side of the trade	R
executionCodes	Name / Value Pairs	Optional. Can include zero or more execution codes, as described in Data Dictionary for Execution Codes. These codes would only apply only to this side of the trade	C
capacity	Choice	See entry for Capacity in the Data Dictionary for acceptable values	R
member	Member Alias	The identifier for the member firm that is responsible for the order being filled	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID

4.10. Order Cancel Route Event

When an exchange initiates a cancel request on an order it has previously routed away, it must report its intent to cancel, using a Cancel Route Event.

Table 30: Order Cancel Route

Field Name	Data Type	Description	Include Key
type	Message Type	ECR	R
exchange	Exchange ID	The ID for the exchange canceling the routed order	R
eventTimestamp	Timestamp	The date/time when the cancel request was sent to the routing firm	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the entity that received this routed order. This value will be the same as in the Order Route event for the order being canceled	R
routedOrderID	Text (40)	The routed ID for the order being canceled - must also match the routedOrderID in the original Order Route message for this order	R
session	Text (40)	The session ID on which the cancel request is being made - must also match the session in the original Order Route message for this order	R
desiredLeavesQty	Unsigned	The desired number of shares remaining in the order after the cancel request has been issued. A value of zero indicates a full cancel	R
result	Choice	The result of the cancel request (e.g. acknowledged, rejected, or no response). See the Data Dictionary for the list of allowed values	O
resultTimestamp	Timestamp	The date/time the result of cancel request was received, required if the result is ACK (acknowledged) or REJ (rejected)	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, symbol, exchange, routedOrderID, routingParty

4.11. Order Modify Route Event

When an exchange initiates a modify or cancel/replace request on an order it has previously routed away, it must report its intent to modify the order, using a Modify Route Event.

If the request does not change the routed order ID, then both routedOrderID and routedOriginalOrderID must be the same.

Table 31: Order Modify Route

Field Name	Data Type	Description	Include Key
type	Message Type	EMR	R
exchange	Exchange ID	The ID for the exchange modifying the routed order	R
eventTimestamp	Timestamp	The date/time when the exchange made the modify request	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the entity that received this routed order. This value will be the same as in the Order Route event for the order being modified	R
routedOrderID	Text (40)	The new routed ID for the order, which will be used to refer to the routed order after the modification (in FIX, ClOrdID - in OUCH, Replacement Order Token)	R
routedOriginalOrderID	Text (40)	The ID for the order being modified, as sent to the routing broker in the original route message, or the most recent modify message (in FIX OrigClOrdID, in OUCH Existing Order Token)	R
session	Text (40)	The ID assigned to the session used to send the modify request from the routing broker to the exchange - must also match the session in the original Order Route message for this order	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	R

Field Name	Data Type	Description	Include Key
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values.	R
capacity	Choice	See entry for Capacity in the Data Dictionary for the full list of acceptable values	R
handlingInstructions	Name/Value Pairs	Can include zero or more handling instructions, as described in Data Dictionary for Handling Instructions	C
result	Choice	The result of the modify request (e.g. acknowledged, rejected, or no response). See the Data Dictionary for the list of allowed values	O
resultTimestamp	Timestamp	The date/time the result of modify request was received, required if the result is ACK (acknowledged) or REJ (rejected)	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R
nbbPrice	Price	The national best bid price at the moment the trade occurred	R
nbbQty	Unsigned	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	R
nboQty	Unsigned	The national best offer quantity at the moment the trade occurred	O

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, symbol, exchange, routedOrderID, routingParty
- Previous Route Link Key: date, symbol, exchange, routedOriginalOrderID, routingParty

4.12. Order Restatement Event

Orders that persist across business days (e.g., GTC orders) must be restated each day before any other activity is reported for that symbol. The restatement is an explicit confirmation that the order is still active in the reporter's order book, and also provides an opportunity to use per-day unique order IDs for all orders.

The attributes of the order will be restated in terms of the order's current state, after any corporate actions have been processed (e.g., if a 2:1 split occurred, the quantity and price would reflect the resulting change).

Table 32: Order Restatement

Field Name	Data Type	Description	Include Key
type	Message Type	EORS	R
exchange	Exchange ID	The ID for the exchange which is restating this order	R
eventTimestamp	Timestamp	The date/time when the order was restated by the exchange	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderDate	Date	The most recent trading day for which the order was active. Note that this may not be the date when the order was originally accepted. If the order has been active for multiple trading days, this field must reference the previous trading day when the order was active	R
originalOrderID	Text (40)	The most recent internal order ID that was assigned to the order before this restatement event. If the order ID has not changed, then orderID and originalOrderID must be equivalent. Note this requirement is different from modification events	R
side	Choice	The side of the order (e.g., Buy, Sell, Short, etc.). See entry for "side" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity, as adjusted for a corporate action, if applicable	R
displayQty	Unsigned	The displayed quantity for this order	R
displayPrice	Price	The displayed price for this order (required if displayQty is greater than zero)	C
workingPrice	Price	The working price of the order	C

Field Name	Data Type	Description	Include Key
leavesQty	Unsigned	The quantity of the order that remains open	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values.	R
capacity	Choice	See entry for Capacity in the Data Dictionary for acceptable values	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in Data Dictionary for Handling Instructions	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Previous Order Key: originalOrderDate, exchange, symbol, originalOrderID

4.13. Trade Break Event

When a trade is broken, an event is reported to CAT with the appropriate information. Note that CAT adds the event to the history of the order. The broken trade is not removed from the history, as it is something that actually happened and should be recorded.

Table 33: Order Trade Break

Field Name	Data Type	Description	Include Key
type	Message Type	ETB	R
exchange	Exchange ID	The ID for the exchange on which the trade took place	R
eventTimestamp	Timestamp	The date/time of the break event	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, as reported on the original trade	R

Field Name	Data Type	Description	Include Key
		that is being broken	
tradeDate	Date	The date on which the trade being broken occurred	R
tradeID	Text (40)	The ID for the trade that is being broken. This must match a previously reported trade	R
quantity	Unsigned	If the full quantity is being broken, then this field can be omitted. Otherwise, this represents the quantity of the original trade that is being broken	O
reason	Text (255)	Free format text field, with the reason for the break	O

Lifecycle keys for this event:

- Trade Key: tradeDate, exchange, symbol, tradeID

4.14. Trade Correction Event

If a trade is corrected in any way, a correction event must be reported to CAT with all details of the trade, after having been corrected.

As with trade breaks, CAT will still keep the original trade, adding the correction to the audit trail of the trade being corrected.

Table 34: Order Trade Correction

Field Name	Data Type	Description	Include Key
type	Message Type	ETC	R
exchange	Exchange ID	The ID for the exchange on which the trade took place.	R
eventTimestamp	Timestamp	The date/time of correction	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	R
tradeID	Text (40)	This ID for the trade being corrected	R
refTradeID	Text (40)	The trade being referenced. Used to link corrections if trade corrections can assign new identifiers to trades. If included, refTradeID must reference a previously reported trade, or a previously reported	C

Field Name	Data Type	Description	Include Key
		trade correction that has a matching tradeID	
quantity	Unsigned	Quantity of the trade.	R
price	Price	Price of the trade	R
saleCondition	Text (8)	Conditions under which trade was executed	C
executionCodes	Name/Value Pairs	Describes any execution codes, acceptable values are described in Data Dictionary. These codes apply to both sides of the trade	C
executionTimestamp	Timestamp	The date/time of the execution, applicable only when the execution time was corrected	O
buyDetails	Order Trade Side Details	See Order Trade Side Details table 26	O
sellDetails	Order Trade Side Details	See Order Trade Side Details table 26	O
reason	Text (255)	Free format text field, with the reason for the correction	O

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, buyDetails.orderID
- Order Key: date, exchange, symbol, sellDetails.orderID
- Route Link Key: date, symbol, exchange, buyDetails.routedOrderID
- Route Link Key: date, symbol, exchange, sellDetails.routedOrderID
- Trade Key: date, exchange, symbol, tradeID

4.15. Lifecycle Keys

The lifecycle keys for each event are summarized in the following table.

Table 35: Section 4 Lifecycle Keys

Section	Event	Lifecycle Keys
4.1	Order Accepted	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, routingParty, routedOrderID, session, exchange Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)
4.2	Order Route	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, exchange, routedOrderID, routingParty

Section	Event	Lifecycle Keys
4.3	Internal Order Route	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty
4.4	Order Modified	Order Key: date, exchange, symbol, orderID Previous Order Key: date, exchange, symbol, originalOrderID Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)
4.5	Order Adjusted	Order Key: date, exchange, symbol, orderID Previous Order Key: date, exchange, symbol, originalOrderID Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)
4.6	Order Canceled	Order Key: date, exchange, symbol, orderID
4.7	Order Trade	Order Key: date, exchange, symbol, buyDetails.orderID Order Key: date, exchange, symbol, sellDetails.orderID Trade Key: date, exchange, symbol, tradeID Route Link Key: date, symbol, exchange, buyDetails.orderID Route Link Key: date, symbol, exchange, sellDetails.orderID
4.8	Order Fill	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, exchange, routedOrderID, session, routingParty Fill Key: date, exchange, symbol, fillID
4.9	Bulk Print Event	Order Key: date, exchange, symbol, orderID
4.10	Order Cancel Route	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, exchange, routedOrderID, routingParty
4.11	Order Modify Route	Order Key: date, exchange, symbol, orderID Route Link Key: date, symbol, exchange, routedOrderID, routingParty Previous Route Link Key: date, symbol, exchange, routedOriginalOrderID, routingParty
4.12	Order Restatement	Order Key: date, exchange, symbol, orderID Previous Order Key: originalOrderDate, exchange, symbol, originalOrderID
4.13	Trade Break	Trade Key: tradeDate, exchange, symbol, tradeID
4.14	Trade Correction	Order Key: date, exchange, symbol, buyDetails.orderID Order Key: date, exchange, symbol, sellDetails.orderID Route Link Key: date, symbol, exchange, buyDetails.routedOrderID

Section	Event	Lifecycle Keys
		Route Link Key: date, symbol, exchange, sellDetails.routedOrderID Trade Key: date, exchange, symbol, tradeID

5. Events for Options Exchanges

These events are specific for options exchanges.

Table 36: Events for Options Exchanges

Sec	Event	Message Type	Description
5.1.1	Quote	OQ	A new quote or a quote replacement
5.1.2	Quote Cancel	OQC	Report when a quote is canceled
5.2.1.1	Simple Option Order Accepted	OOA	Represents either a stand-alone option series order, or one leg of a complex parent order accepted by an exchange
5.2.1.2	Complex Option Order Accepted	OCOA	Represents the complex option order accepted by an exchange
5.2.1.3	Stock Leg Order	OSL	Stock legs are reported individually, with a link to the parent complex order
5.2.2.1	Option Order Modified	OOM	Modification of a simple option order or an option leg order
5.2.2.2	Complex Option Order Modified	OCOM	Modification of a complex option order
5.2.2.3	Stock Leg Modified	OSLM	Modification of a stock leg of a complex option order
5.2.2.4	Option Order Adjusted	OOJ	Adjustment of a simple option order or an option leg order
5.2.2.5	Complex Option Order Adjusted	OCOJ	Adjustment of a complex option order
5.2.2.6	Stock Leg Adjusted	OSLJ	Adjustment of a stock leg of a complex option order
5.2.3	Option Order Canceled	OOC	Cancellation of a simple option order or a complex option order
5.2.4.2	Option Route	OOR	Routing all or part of a simple option order, routing two stock legs to be crossed, or routing a stock leg for execution
5.2.4.3	Internal Option Route	OIR	Internal route of an option or a leg of a complex option
5.2.4.4	Internal Complex Option Route	OCIR	Internal route of a complex option
5.2.4.5	Modify Option Route	OOMR	Modification or cancel/replace request on an option or stock leg order previously routed away,

Sec	Event	Message Type	Description
5.2.4.6	Option Cancel Route	OOCR	Cancel request on an order that has been previously routed away
5.2.5.1	Simple Option Trade	OT	Two-sided trade report for simple options and option legs
5.2.5.2	Stock Leg Fill	OSLF	One-sided fill of a routed stock leg order
5.2.6	Post Trade Allocation	OPTA	In the event of a modified, canceled, or replaced post trade Allocation, the final allocation is reported to CAT.
5.3	Option Order Restatement	OORS	Restatement for options orders that persist across business days (e.g., GTC orders)
5.4	Option Trade Break	OTB	When a trade is broken
5.5	Option Trade Correction	OTC	When a trade is corrected in any way

5.1. Market Maker Quotes

Quotes issued by market makers (MMs) to options exchanges must be reported to CAT. This section will describe the types of attributes that are used to model quote events, and the types of quote events that should be reported to CAT. CAT supports both one-sided and two-sided quotes.

While some exchanges create quotes and orders the same way, CAT considers them distinct from a reporting perspective, and they must be reported distinctly. First, MMs are exempt from reporting their quotes to CAT (Section 6.4(d)(iii) of the CAT NMS Plan). Instead, the exchange is fully responsible for submitting the quotes they receive from MMs. Second, the MMs must inform the exchange of the time that they sent each quote, so the exchange can report it to CAT along with the quote. Third, quotes require fewer data elements than orders.

Each quote must have a unique Quote ID. Specifically, when a trade occurs with a MM quote on one side, the Quote ID in the trade will identify the exact quote. The combination of Exchange ID, Date, Option ID, and Quote ID should be globally unique.

Furthermore, each quote update must also have a unique Quote ID which is different from the Quote ID for the quote being updated. If the exchange only supports a single quote per MM, the event can be so noted, and the Quote ID for the quote that is being replaced is not necessary. Otherwise, the update must also include the Quote ID for the quote that is being updated/replaced by the new quote.

The exchange must guarantee uniqueness of quote IDs throughout the day.

There are two types of quote events in CAT:

- **Quote Event:** Used to report a new quote or a quote replacement. When a quote is replaced, the Original Quote ID will identify the quote being replaced, and the Quote ID will provide the new ID for the updated and replaced quote (or note in the event that the market maker can only have one quote active at any given time).
- **Quote Cancel:** Reported when a quote is canceled.

For block quotes, each quote in the block would be reported to CAT as a separate quote, with a separate unique Quote ID. In such a case, the quote Sent Timestamp would be the same for each quote from the same block because they were all sent at the same time by the MM. However, the combination of Event Timestamp and Event Sequence Number must be unique for each quote.

Similarly, when a bulk cancel is requested, a separate quote cancel event is required for each quote that is canceled by such a request.

On some exchanges, quotes are allowed to be sent before the trading system is ready to process them. For example, there may be an established protocol where the API documents that quotes sent before a particular time are ignored. Or, a protocol may send a "Now Accepting Quotes" message to market makers, and any quotes sent before that time are ignored. In such cases, those ignored quotes are not processed, so they should not be reported to CAT.

Note that all pre-open quotes are still reportable to CAT. This exception is explicitly for those cases where the exchange allows quotes to be sent before they are officially accepted - but those quotes are neither processed, nor entered into the book, nor accepted for participating in the opening nor any other trading session.

Once the system has started accepting quotes (either because a set time has arrived, or it has sent out a message indicating that quotes are now being accepted), then all quotes must be reported. CAT does not have rules in place for when exchanges start accepting quotes, but it seems that all exchanges start accepting quotes at least five minutes before the start of trading.

For example, in the following diagram, an exchange ignores quotes until they send their "Now Accepting Quotes" message. Thereafter all quotes are processed and reported to CAT.



Figure 3: Accepted Quotes Processing

Similarly, if a quote is rejected and neither accepted nor booked, then the quote should not be reported to CAT.

5.1.1. Quote Event

The following data elements are to be reported with all quote events. For two-sided quotes, all bid/ask/price/qty values are required. For one-sided quotes, both the price and quantity fields are required, but only for one side.

Table 37: Quote Events

Field Name	Data Type	Description	Include Key
type	Message Type	OQ	R
exchange	Exchange ID	The identifier for the exchange that received this quote	R
eventTimestamp	Timestamp	The date/time when the quote was received by the exchange	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
marketMaker	Member Alias	The Member Alias assigned by the SRO to identify the market maker issuing the quote. In the case where a market maker has multiple users (e.g., acronyms used to differentiate users within the same MM), there would be a separate Member Alias given to each user or sub-account	R
sentTimestamp	Timestamp	The date/time when the market maker sent the quote to the exchange	O
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R

Field Name	Data Type	Description	Include Key
quoteID	Text (40)	The unique identifier assigned to this quote by the exchange	R
onlyOneQuote	Boolean	True if the system allows only one quote per OptionID for this market maker; false otherwise	R
originalQuoteID	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 event, that quote will be considered to have been replaced. This field does not have to be included if onlyOneQuote is true, since it is known implicitly that the previous quote is being replaced	C
bidPrice	Price	The price being bid for the option (can be zero in two-sided quote which supports spread quotes in low prices names)	C
bidQty	Unsigned	The quantity being bid for the option (can be zero in two-sided quote which supports spread quotes in low prices names)	C
askPrice	Price	The price being asked for the option	C
askQty	Unsigned	The quantity being asked for the option	C
bidDisplayPrice	Price	The display price being bid for the option (can be zero in two-sided quote which supports spread quotes in low prices names)	C
bidDisplayQty	Unsigned	The display quantity being bid for the option (can be zero in two-sided quote which supports spread quotes in low prices names)	C
askDisplayPrice	Price	The display price being asked for the option	C
askDisplayQty	Unsigned	The display quantity being asked for the option	C

Lifecycle keys for this event:

- Quote Key: date, exchange, optionID, quoteID
- Previous Quote Key: date, exchange, optionID, originalQuoteID

5.1.2. Quote Cancel Event

The following data elements are required for cancel quote events.

Table 38: Quote Cancel Events

Field Name	Data Type	Description	Include Key
type	Message Type	OQC	R

Field Name	Data Type	Description	Include Key
exchange	Exchange ID	The identifier for the exchange processing the quote cancel	R
eventTimestamp	Timestamp	The date/time when the quote cancel occurred	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
marketMaker	Member Alias	The Member Alias assigned by the SRO to identify the market maker issuing the quote cancel. In the case where a market maker has multiple users (e.g., acronyms used to differentiate users within the same MM), there would be a separate Member Alias given to each user or sub-account	R
sentTimestamp	Timestamp	The date/time when the market maker sent the quote cancel to the exchange. This field is only required if the cancel initiator is the market maker	O
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
quoteID	Text (40)	The unique identifier assigned to this quote to be canceled by the exchange. This field can be omitted if onlyOneQuote is true	C
onlyOneQuote	Boolean	True if the system allows only one quote for this market maker; false otherwise	R
initiator	Choice	Specifies who initiated the cancel: the market maker or exchange	R
cancelReason	Choice	This code represents the reason why the quote was canceled. The actual value of the code is exchange specific. See Data Dictionary for the list of allowed values	O

Lifecycle keys for this event:

- Quote Key: date, exchange, optionID, quoteID

5.2. Options Orders

Order events for options are reported as either simple or complex. Simple option orders are orders for a single option series (including flex options). Complex option orders contain two or more simple option orders, or at least one each of a simple option order and equity order.

For CAT, an order for a complex option will be reported at the parent complex level, and additional orders will be reported if/when orders are created for each leg. Some exchanges create leg orders as soon as

the parent is created, and other exchanges create leg orders only when an execution is created. CAT supports both reporting scenarios.

Each options order routed to (and then accepted by) an exchange must be reported to CAT. Options orders that are routed to an exchange and then rejected by the exchange are not reportable by the exchange. When an exchange accepts an options order, it must report either a single Option Order Accepted event, or a single Complex Option Order Accepted event followed by one Accepted event for each leg of the complex option.

For manual/floor trades, this will be the identifier for the physical broker. For quotes, it will be an alias for the market maker behind the quote. For system trades, it will be an alias for the system handling that order.

5.2.1. Order Accepted Events

5.2.1.1. Simple Option Order Accepted Event

A simple option order can represent either a stand-alone option series, or one leg of a complex parent order. If the order represents a leg of a complex order, then the field Complex Order ID will be set to the Order ID of the parent complex order. If necessary, the event timestamp and sequence number could be the same as those in the parent complex order.

Fields marked with a lower-case 'r' are required if the event represents a normal option order, and they are conditional if the event represents a leg of a complex order.

Table 39: Simple Option Order Accepted Event

Field Name	Data Type	Description	Include Key
type	Message Type	OOA	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time of order receipt	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R

Field Name	Data Type	Description	Include Key
routingParty	Text (20)	The ID string used to identify the entity that sent this routed order. Leave unset if the option is a leg of a complex order	C
routedOrderID	Text (40)	The ID assigned to this order by the client when submitting the order to the exchange. Leave unset if the option is a leg of a complex order	C
session	Text (40)	The name of the session used to send the order from the routing member firm to the exchange. Leave unset if the option is a leg of a complex order	C
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values	R
price	Price	the limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	r
displayQty	Unsigned	The displayed quantity for this order	r
displayPrice	Price	The displayed price for this order (required if displayQty is greater than zero)	C
workingPrice	Price	The working price of the order at the time it was accepted. Note that Modified events must be reported to CAT anytime the working price changes	C
openCloseIndicator	Choice	the position of the order: either Open, Close, or Unspecified	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	r
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order, that are not necessarily handling instructions	C
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	r
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	r
executingFirm	Alphanumeric(8)	The OCC number of the executing/give-up firm	r
cmtaFirm	Alphanumeric(8)	The OCC number of the CMTA firm (only valid for	C

Field Name	Data Type	Description	Include Key
		CMTA trades)	
member	Member Alias	The identifier for the member firm that is responsible for the order	R
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C
nbbPrice	Price	The NBBO at the moment just before accepting this order.	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order, if this order represents a leg of a complex order	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this order represents a leg of a complex order. Not reported if the complex order's orderID is globally unique	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, orderID, pairedOrderID (if populated in order attributes name value pair)
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.1.2. Complex Option Order Accepted Event

Each complex option order routed to (and accepted by) an exchange must be reported to CAT. CAT requires each leg of a complex order to be reported separately, thus the parent order is relatively small with most order details reported on behalf of each leg.

The number of legs, and description of each leg is encapsulated in the dictionary entry for the Option ID. In addition to the Complex Order Accepted event, at least one Option Order Accepted event must be submitted for each leg of a complex order (Order Accepted for non-option legs).

Some systems allow individual legs to carry specific instructions. Thus, order type information is relevant on a per-leg basis, and not reported for the complex parent itself. Furthermore, some exchange don't create leg orders until a trade is imminent. Thus, the model supports both processes, where leg orders can be created upon initial acceptance and at the point of execution.

No matter when the leg orders are created, each leg must have a unique internal Order ID. Some reporters already create such derived order representations, so these IDs are easy to acquire. Others do not assign identifiers to legs. However, all reporters will be expected to report individual order events for each leg. One suggested method for creating unique leg Order IDs is to use the Order ID of the parent complex order, combined with the leg number (its ordering in the complex option definition). Another is to combine the Complex Order ID with the Option ID and Side of that leg.

Note that the following fields are conditional in this event. If they are present, then they do not have to appear in the individual order events for option legs, unless the value for a leg would be different from the value in the complex order. In other words, these field values apply to all option legs, unless the option leg contains a different value. If these fields are missing, then the data must be present in each option leg.

`coverage, exchOriginCode, executingFirm, cmtaFirm, mktMkrSubAccount`

Table 40: Complex Option Order Accepted Event

Field Name	Data Type	Description	Include Key
type	Message Type	OCO A	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time of order receipt	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the complex order by the exchange	R
side	Choice	The side of the order, for a complex order the values for side can be either "AsDirected" or "Opposite", see entry for "Side" in the Data Dictionary for acceptable values	R
routingParty	Text (20)	The ID string used to identify the entity that sent this routed order	R
routedOrderID	Text (40)	The ID assigned to this order by the routing firm when submitting the order to the exchange	R
session	Text (40)	The name of the session used to send the order from the routing member firm to the exchange	R
price	Price	the net price of the order, which may be negative	C

Field Name	Data Type	Description	Include Key
quantity	Unsigned	the order quantity	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order, that are not necessarily handling instructions	C
isGloballyUnique	Boolean	If reported with a value of true, then the orderID is globally unique across all optionIDs for this exchange/date. This means that no other complex order can have the same orderID. Furthermore, leg events for this complex order must be reported with just the complexOrderID and not the complexOptionID	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	C
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	C
executingFirm	Alphanumeric(8)	The OCC number of the executing/give-up firm	C
cmtaFirm	Alphanumeric(8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID (if isGloballyUnique is false)
- Order Key: date, exchange, orderID (if GloballyUnique is true)
- Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair and isGloballyUnique is false)
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pariedOrderID is populated in order attributes name value pair and isGloballyUnique is true)
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange

5.2.1.3. Stock Leg Order Event

Similar to option legs, stock legs are reported individually, with a link to the parent complex order. If necessary, the event timestamp and sequence number could be the same as those in the parent complex order.

See the explanation about leg Order IDs in the section on complex orders. The same process applies to Order IDs for stock legs.

Table 41: Stock Leg Event

Field Name	Data Type	Description	Include Key
type	Message Type	OSL	R
exchange	Exchange ID	The identifier for the exchange which has accepted this order	R
eventTimestamp	Timestamp	The date/time of order receipt	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology mapping as appropriate	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
side	Choice	The side of the order: See entry for "Side" in the Data Dictionary for acceptable values	R
price	Price	the limit price of the order, if applicable	C
quantity	Unsigned	the order quantity	R
displayQty	Unsigned	the displayed quantity for this order	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details.	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C

Field Name	Data Type	Description	Include Key
clearingFirm	Text (10)	Firm receiving the stock execution	O
nbbPrice	Price	The NBBO at the moment the order was accepted	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order	R
complexOptionID	Text (40)	The optionID for the parent complex order. Not reported if the complex order's orderID is globally unique	C
member	Member Alias	The identifier for the member firm that is responsible for the order. This is the same member as in the complex order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.2. Order Modified Events

An event must be sent to CAT to report any customer modification to the order. Additionally, an event must be sent to CAT to report any changes to the order due to an exchange action, including updates related to changes in market conditions.

Events that should be reported include, but are not limited to:

- Any customer update that passes validation and is successfully processed by the trading system
- Changes to the available quantity of the order, such as liquidity returning from an away market unexecuted
- Changes to the working price, display price, or display quantity
- Changes to the executability of an order, such as when a regular-hours order arrived prior to the opening time and it is now the opening time or when an order expires but no explicit cancellation is provided

5.2.2.1. Option Order Modified Event

This event supports all possible modifications to a simple option order and the legs of multi-leg orders. The full state of the order should be reported, including fields that did not change as a result of the modification.

Table 42: Option Order Modified Event

Field Name	Data Type	Description	Include Key
type	Message Type	OOM	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID used by the exchange to refer to this order from this point forward	R
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
nbbPrice	Price	The NBBO at the moment the modification took place	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
price	Price	the limit price of the order, if applicable	C
Quantity	Unsigned	When the initiator field is set to Firm or Market Maker, the order quantity. Conditional if the order represents a leg of a complex order; otherwise Required.	C

Field Name	Data Type	Description	Include Key
		When the initiator field is set to Exchange, the total quantity available on the local book at the conclusion of the modification.	
leavesQty	Unsigned	The quantity left open after the modification has occurred	R
displayQty	Unsigned	The displayed quantity for this order. Conditional if the order represents a leg of a complex order; otherwise Required	C
displayPrice	Price	The displayed price for this order (required if displayQty is greater than zero)	C
workingPrice	Price	The working price of the order	C
openCloseIndicator	Choice	the position of the order: either Open, Close, or Unspecified	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values. Conditional if the order represents a leg of a complex order; otherwise Required	C
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	R
executingFirm	Alphanumeric (8)	The OCC number of the executing/give-up firm	R
cmtaFirm	Alphanumeric (8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C
complexOrderID	Text (40)	The Order ID for the parent complex order, if this order represents a leg of a complex order. If the ID for the complex order also changed, then this would be the new Order ID for the complex order	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this order represents a leg of a complex order. Not	C

Field Name	Data Type	Description	Include Key
		reported if the complex order's orderID is globally unique	
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Except as noted above, not required for exchange-driven modifications	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair) Previous Order Key: date, exchange, optionID, originalOrderID
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.2.2. Complex Option Order Modified Event

If the price or quantity changes on a complex order, a complex option order modified event needs to be submitted to CAT. If a change to the parent complex order causes attributes in the leg orders to change, then Order Modified events must be reported for each affected leg. Note that this only applies if a leg order actually exists at the time of the modification to the complex order. For exchanges that create leg orders at execution, only the complex order needs to be modified. However, if a change in net price to the complex order causes the price of the leg orders to change, changes to the leg order prices are not reportable to CAT.

If the internal order ID of the complex order changes, then modified reports must be generated for every leg that exists at the time of the modification, referencing the new order ID of the parent complex order.

The full state of the modified order must be reported, including fields that did not change value as a result of the modification.

Table 43: Complex Option Order Modified Event

Field Name	Data Type	Description	Include Key
type	Message Type	OCOM	R
exchange	Exchange ID	The identifier for the exchange which has received	R

Field Name	Data Type	Description	Include Key
		this order	
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the complex order by the exchange	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
price	Price	The net price of the order, which may be negative	C
quantity	Unsigned	The order quantity	R
leavesQty	Unsigned	The quantity left open after the modification has occurred	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Except as noted above, not required for exchange-driven modifications	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)
- Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session
- Previous Order Key: date, exchange, optionID, originalOrderID

5.2.2.3. Stock Leg Modified Event

When a stock leg is modified, an event must be reported to CAT with the modified data elements. The full state of the modified order must be reported, including fields that did not change value as a result of the modification.

Table 44: Stock Leg Modified Event

Field Name	Data Type	Description	Include Key
type	Message Type	OSLM	R
exchange	Exchange ID	The identifier for the exchange which has accepted this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	A sequence number subsystem identifier	C
seqNumSub	Text(10)	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology mapping as appropriate	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
nbbPrice	Price	The NBBO at the moment the stock leg was modified.	R
nbbQty	Unsigned		O
nboPrice	Price		R

Field Name	Data Type	Description	Include Key
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order. If the ID for the complex order also changed, then this would be the new Order ID for the complex order	R
complexOptionID	Text (40)	The optionID for the parent complex order. Not reported if the complex order's orderID is globally unique	C
price	Price	the limit price of the order, if applicable	C
displayPrice	Price	The displayed price for this order (required if displayQty is nonzero)	C
quantity	Unsigned	The order quantity	R
leavesQty	Unsigned	The number of shares left open after the modification has occurred	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C
clearingFirm	Text (10)	Firm receiving the stock execution	O
member	Member Alias	The identifier for the member firm that is responsible for the order. This is the same member as in the complex order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Previous Order Key: date, exchange, symbol, originalOrderID
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.2.4. Option Order Adjusted Event

This event supports changes to the price, quantity, working price, display price, and display quantity.

All other order instructions are assumed to be unchanged.

Table 45: Option Order Adjusted Event

Field Name	Data Type	Description	Include Key
type	Message Type	OOJ	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID used by the exchange to refer to this order from this point forward	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order	C
displayPrice	Price	The displayed price for this order	C
workingPrice	Price	The working price of the order	C
Quantity	Unsigned	When the initiator field is set to Firm or Market Maker, the order quantity. Conditional if the order represents a leg of a complex order; otherwise Required. When the initiator field is set to Exchange, the total quantity available on the local book at the conclusion of the modification.	C
displayQty	Unsigned	The displayed quantity for this order	C
leavesQty	Unsigned	The quantity left open after the modification has occurred	C
nbbPrice	Price	The NBBO at the moment the stock leg was	R

Field Name	Data Type	Description	Include Key
nbbQty	Unsigned	modified	O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order, if this order represents a leg of a complex order. If the ID for the complex order also changed, then this would be the new Order ID for the complex order	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this order represents a leg of a complex order. Not reported if the complex order's orderID is globally unique	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Except as noted above, not required for exchange-driven modifications	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)
- Route Link Key: date, optionID, routedOrderID, exchange, routingParty, sessionPrevious Order Key: date, exchange, optionID, originalOrderID
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.2.5. Complex Option Order Adjusted Event

When a complex option is modified in such a way that only impacts the price and/or quantity, an instance of this event can be reported in place of the Complex Option Order Modified event.

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

For changes in quantity, both quantity and leavesQty are required (i.e., either both are reported or neither are reported).

Table 46: Complex Option Order Adjusted Event

Field Name	Data Type	Description	Include Key
type	Message Type	OCOJ	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the complex order by the exchange	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
price	Price	The net price of the order, which may be negative	C
quantity	Unsigned	The order quantity	C
leavesQty	Unsigned	The quantity left open after the modification has occurred	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
routedOrderID	Text (40)	For customer-driven changes to the order, the ID assigned to this order by the routing firm when submitting the modification to the exchange. For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Except as noted above, not required for exchange-driven modifications	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID

- Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if pairedOrderID is populated in order attributes name value pair)

Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session

- Previous Order Key: date, exchange, optionID, originalOrderID,

5.2.2.6. Stock Leg Adjusted Event

When a stock leg is modified where it only impacts the price and/or quantity, an instance of this event can be reported in place of the Stock Leg Modified event.

For changes in quantity, both quantity and leavesQty are required (i.e., either both are reported or neither are reported).Table 47: Stock Leg Adjusted Event

Field Name	Data Type	Description	Include Key
type	Message Type	OSLJ	R
exchange	Exchange ID	The identifier for the exchange which has accepted this order	R
eventTimestamp	Timestamp	The date/time at which the modification was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology mapping as appropriate	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderID	Text (40)	The internal order ID that used to be assigned to this order until this modification happened. If the order kept its ID through the modification, then this value need not be included	C
initiator	Choice	Indicates who initiated the order modification: See entry for "initiator" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order	C
displayPrice	Price	The displayed price for this order	C
quantity	Unsigned	The order quantity	C
leavesQty	Unsigned	The quantity left open after the modification has occurred.	C
displayQty	Unsigned	The displayed quantity for this order	C

Field Name	Data Type	Description	Include Key
nbbPrice	Price	The NBBO at the moment the stock leg was modified.	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order. If the ID for the complex order also changed, then this would be the new Order ID for the complex order	R
complexOptionID	Text (40)	The optionID for the parent complex order. Not reported if the complex order's orderID is globally unique	C
member	Member Alias	The identifier for the member firm that is responsible for the order. This is the same member as in the complex order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Previous Order Key: date, exchange, symbol, originalOrderID
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderIDOptions

5.2.3. Order Canceled Event

An order canceled event is used to report a cancelation of a simple option order or a complex option order. For complex options orders, if leg-level orders have been opened before a canceled event, then canceled events must be reported for each of the leg orders as well.

CAT also supports partial cancels. Partial canceled events for complex orders follow the same rule, if there are open leg-level orders before a canceled event, partial canceled events must also be reported for each of the legs.

Note that the order canceled events contains both the fields optionID and symbol. Both of these fields are conditional. If the order canceled event is for a stock leg order corresponding to a complex option order, then the symbol field is mandatory. If the order canceled event is for a simple option order, a complex option order, or an option leg order of a complex order, then the field optionID is mandatory.

Table 48: Option Order Canceled

Field Name	Data Type	Description	Include Key
type	Message Type	OOO	R
exchange	Exchange ID	The ID for the exchange reporting the order canceled	R
eventTimestamp	Timestamp	The date/time at which the cancellation was received or originated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option dictionary. Used if this cancel is for a simple option order or complex option order	C
symbol	Symbol	The stock symbol in the symbology of the listing exchange, or the reporter's symbology mapping as appropriate. Used only if this cancel is for the stock leg of a complex option order	C
orderID	Text (40)	The internal order ID assigned to the order by the exchange. If a leg is being canceled, the orderID will represent the leg order being canceled	R
cancelQty	Unsigned	The quantity being canceled	R
leavesQty	Unsigned	The quantity left open after the cancel event (zero for a full cancel)	R
initiator	Choice	Indicates who initiated the order cancellation: See entry for "initiator" in the Data Dictionary for acceptable values	R
cancelReason	Choice	Code representing the reason why the order was canceled. The actual value of the code is exchange specific. See Data Dictionary for the list of allowed values	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Order Key: date, exchange, symbol, orderID

5.2.4. Routing Orders

5.2.4.1. Internal Routing and Floor Activity

Internal routes on the exchange are different from internal routes in a Broker Dealer. In particular, internal routes at a broker dealer are required to be reported to CAT, but internal routes at an exchange are not.

However, there are cases where knowing the system or process of where an order executed is useful, for example when orders are routed through various internal systems on the floor. These processes differ between exchanges and the use cases are incredibly diverse. Furthermore, there is no guidance in the CAT requirements as to what is or is not supposed to be reported in these cases, so we need to be flexible in allowing a diverse set of items to be reported. These somewhat reportable data elements arrive in two forms.

First, an order may be executed with some additional information that was not available when it was placed (e.g., as part of an auction, or through some floor trading workstation). Thus, there is an element available on Trade Events (Execution Codes), which provides a way to add special exchange specific codes to an execution. The Execution Codes is a name/value pair field (like order Handling Instructions) and can provide additional execution information, like where a trade may have been executed on the floor, or supplemental execution/clearing information.

Additionally, the Note Event (reference Section 3.7.1), which contains either an Order ID or a Quote ID to link the note to a specific order or quote can be used to add specific instructions related to the order.

Some systems are composed of multiple subsystems, each having their own reporting and order identification requirements. In such cases, it may be extremely difficult or time consuming to coerce events into a single set of unique order IDs and reporting. Thus, an internal route event is also provided for reporting an order as it progresses between internal subsystems, and possibly changes internal order ID.

5.2.4.2. Option Route Event

External routes from an options exchange come in three basic forms: routing all or part of a simple option series order to an away market, routing two stock legs to be crossed, and routing a stock leg for execution. All of these events require certain pieces of information to enable linkage creation that can track the entire order lifecycle.

The following Option Route Event is used to report when an exchange routes a simple option order, or any leg of a complex option order. A complex order will never be routed away.

Table 49: Option Route Event

Field Name	Data Type	Description	Include Key
type	Message Type	OOR	R
exchange	Exchange ID	The identifier for the exchange which is routing the order away	R
eventTimestamp	Timestamp	The date/time at which the order was routed	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol of the stock leg being routed away - only for routing stock legs	C
optionID	Text (40)	The ID of the option being routed away	C
orderID	Text (40)	The internal order ID of the order being routed away	R
routingParty	Text (20)	The ID string used to identify the entity that is receiving this routed order	R
routedOrderID	Text (40)	The ID of the routed order, as represented in the order message sent to the routing broker	R
session	Text (40)	The ID of the session used to send the order to the routing broker	R
side	Choice	The side of the order: See entry for "Side" in the Data Dictionary for acceptable values	R
price	Price	The price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types	R
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C

Field Name	Data Type	Description	Include Key
result	Choice	The result of the route request. (A request can be ACK - Acknowledged, REJ - Rejected, or NR - No Response) See the data dictionary for a list of permissible values	O
resultTimestamp	Timestamp	The date/time when the exchange received the result of the route request. This timestamp is not required if the value for the result field is No Response	O
nbbPrice	Price	The NBBO at the moment just before routing this order	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order, if this order represents a leg of a complex order	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this order represents a leg of a complex order. Not reported if the complex order's orderID is globally unique	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, optionID, routingParty, routedOrderID, exchange
- Route Link Key: date, symbol, routingParty, routedOrderID, exchange
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.4.3. Internal Option Route Event

This event provides a means by which options (and legs of complex options) can be routed between internal systems.

Table 50: Internal Option Route Event

Field Name	Data Type	Description	Include Key
type	Message Type	OIR	R
exchange	Exchange ID	The ID for the exchange which is routing this order	R

Field Name	Data Type	Description	Include Key
eventTimestamp	Timestamp	The date/time at which the order was routed	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol of the stock leg being routed away - only for routing stock legs	C
optionID	Text (40)	The ID of the option being routed away	C
orderID	Text (40)	The internal order ID of the order being routed away	R
routingParty	Text (20)	The ID string used to identify the internal subsystem that is receiving this routed order. This value must match the value reported by the receiving subsystem in the <code>routingParty</code> field of their Order Accepted report	R
routedOrderID	Text (40)	The ID assigned to this order by the exchange when submitting the order to the subsystem. This value must match the value reported by the receiving subsystem in the <code>routedOrderID</code> field of their Order Accepted report	R
session	Text (40)	The ID assigned to the specific session used when sending the order from the sending subsystem to the receiving subsystem. This value must match the value reported by the receiving subsystem in the <code>session</code> field of their Order Accepted report	R
side	Choice	The side of the order: See entry for "Side" in the Data Dictionary for acceptable values	R
price	Price	The price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types	R
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the	C

Field Name	Data Type	Description	Include Key
		Data Dictionary for more details.	
result	Choice	The result of the route request. (A request can be ACK - Acknowledged, REJ - Rejected, or NR - No Response) See the data dictionary for a list of permissible values	O
resultTimestamp	Timestamp	The date/time when the exchange received the result of the route request. This timestamp is not required if the value for the result field is No Response	O
complexOrderID	Text (40)	The Order ID for the parent complex order, if this order represents a leg of a complex order	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this order represents a leg of a complex order. Not reported if the complex order's orderID is globally unique	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
- Route Link Key: date, symbol, routingParty, routedOrderID, session, exchange
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.2.4.4. Internal Complex Option Route Event

While complex orders are not routed between exchanges, they may be routed internally. This event provides a means by which complex options can be routed between internal systems.

Table 51: Internal Complex Option Route Event

Field Name	Data Type	Description	Include Key
type	Message Type	OCIR	R
exchange	Exchange ID	The ID for the exchange which is routing this order	R
eventTimestamp	Timestamp	The date/time at which the order was routed	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C

Field Name	Data Type	Description	Include Key
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID of the option being routed away	R
orderID	Text (40)	The internal order ID of the order being routed away	R
routingParty	Text (20)	The ID string used to identify the internal subsystem that is receiving this routed order. This value must match the value reported by the receiving subsystem in the <code>routingParty</code> field of their Order Accepted report	R
routedOrderID	Text (40)	The ID assigned to this order by the exchange when submitting the order to the subsystem. This value must match the value reported by the receiving subsystem in the <code>routedOrderID</code> field of their Order Accepted report	R
session	Text (40)	The ID assigned to the specific session used when sending the order from the sending subsystem to the receiving subsystem. This value must match the value reported by the receiving subsystem in the <code>session</code> field of their Order Accepted report	R
side	Choice	The side of the order, for a complex order the values for side can be either "AsDirected" or "Opposite", see entry for "Side" in the Data Dictionary for acceptable values	R
price	Price	The net price of the order, which may be negative.	C
quantity	Unsigned	The order quantity	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions	C
isGloballyUnique	Boolean	If reported with a value of true, then the orderID is globally unique across all optionIDs for this exchange/date. This means that no other complex order can have the same orderID. Furthermore, leg events for this complex order must be reported with just the complexOrderID and not the complexOptionID	O
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	C
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of	C

Field Name	Data Type	Description	Include Key
		acceptable values	
executingFirm	Alphanumeric(8)	The OCC number of the executing/give-up firm	C
cmtaFirm	Alphanumeric(8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange

5.2.4.5. Modify Option Route Event

When an exchange initiates a modify or cancel/replace request on an option or stock leg order it has previously routed away, it must report its intent to modify the order, using a Modify Option Route Event.

If the request does not change the routed order ID, then both routedOrderID and routedOriginalOrderID must be the same.

Note that the Modify Option Route event contains both the fields optionID and symbol. Both of these fields are conditional. If the Modify Option Route event is for a stock leg order, then the symbol field is mandatory and optionID field is not necessary. If the Modify Option Route event is for a simple option order, or an option leg order of a complex order, then the field optionID is mandatory.

Table 52: Modify Option Route Event

Field Name	Data Type	Description	Include Key
type	Message Type	OOMR	R
exchange	Exchange ID	The ID for the exchange modifying the routed order	R
eventTimestamp	Timestamp	The date/time when the exchange made the modify request	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C

Field Name	Data Type	Description	Include Key
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	C
optionID	Text (40)	The ID of the option being routed away	C
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the entity that received this routed order	R
routedOrderID	Text (40)	The new routed ID for the order, which will be used to refer to the routed order after the modification (in FIX, ClOrdID - in OUCH, Replacement Order Token)	R
routedOriginalOrderID	Text (40)	The routed ID for the order being modified, as sent to the routing broker in the original route message, or the most recent modify message (in FIX OrigClOrdID, in OUCH Existing Order Token)	R
session	Text (40)	The ID assigned to the session used to send the modify request from the exchange to the routing broker- must also match the session in the original Order Route message for this order	R
price	Price	The limit price of the order, if applicable	C
quantity	Unsigned	The order quantity	R
displayQty	Unsigned	The displayed quantity for this order	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the corresponding entry in the Data Dictionary for more details about order types	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name/Value Pairs	Can include zero or more handling instructions, as described in Data Dictionary for Handling Instructions	C
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	R
result	Choice	The result of the modify request. (A request can be ACK - Acknowledged, REJ - Rejected, or NR - No Response) See the data dictionary for a list of permissible values	O
resultTimestamp	Timestamp	The date/time when the exchange received the result of the modify request. This timestamp is not required if the value for the result field is No Response	O
nbbPrice	Price	The national best bid price at the moment the trade occurred	R

Field Name	Data Type	Description	Include Key
nbbQty	Unsigned	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	R
nboQty	Unsigned	The national best offer quantity at the moment the trade occurred	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, optionID, routingParty, routedOrderID, exchange
- Route Link Key: date, symbol, routingParty, routedOrderID, exchange
- Previous Route Link Key: date, optionID, routingParty, routedOriginalOrderID, exchange
- Previous Route Link Key: date, symbol, routingParty, routedOriginalOrderID, exchange

5.2.4.6. Option Cancel Route Event

When an exchange initiates a cancel request on an order that has been previously routed away, it must report the intent to cancel, using an Option Cancel Route Event.

Note that the Option Cancel Route event contains both the fields `optionID` and `symbol`. Both of these fields are conditional. If the Option Cancel Route event is for a stock leg order, then the `symbol` field is mandatory and `optionID` field is not necessary. If the Option Cancel Route event is for a simple option order, or an option leg order of a complex order, then the field `optionID` is mandatory.

Table 53: Option Cancel Route

Field Name	Data Type	Description	Include Key
type	Message Type	OOCR	R
exchange	Exchange ID	The ID for the exchange canceling the routed order	R
eventTimestamp	Timestamp	The date/time when the cancel request was sent to the routing firm	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C

Field Name	Data Type	Description	Include Key
seqNumSub	Text (10)	A sequence number subsystem identifier	C
symbol	Symbol	The stock symbol, in either the symbology of the listing exchange, or the reporter's symbology as defined in their symbol dictionary	C
optionID	Text (40)	The ID of the option being routed away	C
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
routingParty	Text (20)	The ID string used to identify the entity that received this routed order. This value will match the value on the Route event for the order being canceled	R
routedOrderID	Text (40)	The routed ID for the order being canceled - must also match the routedOrderID in the original Order Route message for this order	R
session	Text (40)	The session ID on which the cancel request is being made - must also match the session in the original Order Route message for this order	R
desiredLeavesQty	Unsigned	The desired number of shares remaining in the order after the cancel request has been issued. A value of zero indicates a full cancel	R
result	Choice	The result of the cancel request. (A request can be ACK - Acknowledged, REJ - Rejected, or NR - No Response) See the data dictionary for a list of permissible values	O
resultTimestamp	Timestamp	The date/time when the exchange received the result of the cancel request. This timestamp is not required if the value for the result field is No Response	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Order Key: date, exchange, symbol, orderID
- Route Link Key: date, optionID, routingParty, routedOrderID, exchange
- Route Link Key: date, symbol, routingParty, routedOrderID, exchange

5.2.5. Trades and Fills

All trades on an options exchange involving options are reported as two sided trades, with appropriate clearing information for each side. In the case where an order is routed away, the trade is still reported as a two-sided trade, but without an order on one side (that side will just have clearing information).

Trades off-exchange for non-option legs are reported as one-sided pass through fill events. Note the difference between a trade which the exchange transacted and a fill which the exchange is passing on. Both events are reportable, but they will be reported in different ways. The former as a two-sided trade, and the latter as either a one-sided fill.

5.2.5.1. Simple Option Trade Event

Simple option trade events are two-sided trade reports, providing details about both sides of the trade for an option. The same event is used for both simple options trades and trades for each leg of a complex option.

This section will deal only with simple option trades, the following section will demonstrate how the same event type will be used to report trades at the leg level of complex options.

Option Trade Event

Each option trade contains the following data elements.

Table 54: Option Trade Event

Field Name	Data Type	Description	Include Key
type	Message Type	OT	R
exchange	Exchange ID	The ID of the participant reporting the trade event to CAT	R
eventTimestamp	Timestamp	The date/time of execution	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
tradeID	Text (40)	This ID will be used when a specific trade needs to be identified, for example in trade break and correction reports. The combination of date, exchange, optionID, and tradeID must be globally unique	R
optionID	Text (40)	The ID of the option being traded	R
quantity	Unsigned	Quantity of the trade	R
price	Price	Price of the trade	R
nbbPrice	Price	The NBBO for this particular option series at the moment the event takes place	R
nbbQty	Unsigned		O
nboPrice	Price		R

Field Name	Data Type	Description	Include Key
nboQty	Unsigned		O
saleCondition	Text (8)	Conditions under which trade was executed	C
executionCodes	Name / Value Pairs	Adds special exchange specific codes to an execution. Zero or more codes can be entered to provide additional execution information, like where a trade may have been executed on the floor. These codes apply to both sides of the trade	C
buyDetails	Side Trade Details	Information for the buy side of the trade. Format and element definitions for Buy Details are described in Side Trade Details in Table 54	R
sellDetails	Side Trade Details	Information for the sell side of the trade. Format and element definitions for Sell Details are described in Side Trade Details in – Table 54	R

Side Trade Details

Each side of a trade contains information pertinent to the order and/or quote that contributed to the trade. The Side Trade Details captures those data elements.

Table 55: Side Trade Details

Field Name	Data Type	Description	Include Key
side	Choice	The side of the executed trade: See entry for "Side" in the Data Dictionary for acceptable values	R
leavesQty	Unsigned	The quantity remaining unfilled after this trade event. Not required when used in a trade correction	C
openCloseIndicator	Choice	Indicates the position of the trade, applicable only when this side is an order	C
quoteID	Text (40)	The ID of the quote, only applicable only when this side of the execution is a market maker quote	C
orderID	Text (40)	The ID of the order, only applicable only when this side of the execution is an order	C
executingFirm	Alphanumeric (8)	The OCC number of the executing firm	R
floorBroker	Member Alias	The Member Alias of the floor broker handling the trade, if the trade is handled on the floor	C
cmtaFirm	Alphanumeric (8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable	R

Field Name	Data Type	Description	Include Key
		values	
liquidityCode	Choice	Specifies if this side of the trade was adding or removing liquidity. See entry for liquidityCode in the Data Dictionary for permitted values	O
executionCodes	Name/Value Pairs	Describes any execution codes, as described in Data Dictionary for Execution Codes. These codes would only apply only to this side of the trade	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R
routedOrderID	Text (40)	For events representing an away trade, the exchange-assigned ID used to route the order away.	C

In some cases, an option trade may occur with neither a quoteID nor an orderID for one or both sides of the trade. In these cases, the quoteID/orderID can be omitted. However, the executionCodes must include NOBUYID and/or NOSELLID as appropriate.

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, buyDetails.orderID
- Order Key: date, exchange, optionID, sellDetails.orderID
- Quote Key: date, exchange, optionID, buyDetails.quoteID
- Quote Key: date, exchange, optionID, sellDetails.quoteID
- Route Link Key: date, symbol, exchange, buyDetails.routedOrderID
- Route Link Key: date, symbol, exchange, sellDetails.routedOrderID
- Trade Key: date, exchange, optionID, tradeID

5.2.5.2. Stock Leg Fill Event

When a stock leg executes, it always executes at an away venue, which will report both sides of the trade. The options exchange, while possibly knowing both orders that crossed, did not actually perform the transaction. Thus, all transactions involving stock legs are reported as one-sided pass-along fills of the order, and contain the following data elements.

Table 56: Stock Leg Fill Event

Field Name	Data Type	Description	Include Key
type	Message Type	OSLF	R
exchange	Exchange ID	The ID of the exchange reporting the fill to CAT	R

Field Name	Data Type	Description	Include Key
eventTimestamp	Timestamp	The date/time when the fill was processed by the exchange	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
fillID	Text (40)	An identifier for the fill, unique per reporter/trade date. This ID should uniquely identify any fill for the given exchange, date, and symbol	R
symbol	Symbol	The symbol of the stock being filled	R
quantity	Unsigned	Quantity of the fill	R
price	Price	Price of the fill	R
saleCondition	Text (8)	Conditions under which trade was executed	C
executionCodes	Name / Value Pairs	Adds special exchange specific codes to an execution. Zero or more codes can be entered to provide additional execution information, like where a trade may have been executed on the floor	C
side	Choice	The side of the executed trade: See entry for "Side" in the Data Dictionary for acceptable values	R
leavesQty	Unsigned	The quantity remaining unfilled after this fill event	R
orderID	Text (40)	The ID of the stock leg order	R
clearingFirm	Text (10)	The Member Alias of the clearing firm	O
clearingNumber	Text (20)	DTCC clearing number for this side of the trade	O
member	Member Alias	The identifier for the member firm that is responsible for the order. This is the same member as in the complex order	R

Lifecycle keys for this event:

- Order Key: date, exchange, symbol, orderID
- Fill Key: date, exchange, symbol, fillID

5.2.6. Post Trade Allocation Event

In the event of a modified, canceled, or replaced post trade Allocation, only the final allocation should be reported to CAT.

The fields quoteID and orderID must reference the quote/order from the original trade that is being allocated. If the trade has neither a quoteID nor an orderID, then this event will include neither IDs as

well (this implies that the executionCodes field from the original trade message contains either NOBUYID or NOSELLID).

Table 57: Post Trade Allocation

Field Name	Data Type	Description	Include Key
type	Message Type	OPTA	R
exchange	Exchange ID	The ID of the exchange reporting the fill to CAT	R
eventTimestamp	Timestamp	The date/time when the allocation happened	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID of the option being traded	R
tradeID	Text (40)	The ID for the trade that is being reallocated. This must match a previously reported trade	R
orderID	Text (40)	Order ID being allocated, only applicable when the allocation is related to an order	C
quoteID	Text (40)	The ID of the quote, only applicable when the allocation is related to a market maker quote	C
quantity	Unsigned	Quantity being allocated	R
price	Price	Price of the allocation	R
side	Choice	The side of the executed trade: See entry for "Side" in the Data Dictionary for acceptable values	R
receivingFirm	Alphanumeric (8)	The OCC number of the receiving firm	R
cmtaFirm	Alphanumeric (8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C
openCloseIndicator	Choice	The position of the order: either Open, Close, or Unspecified	O
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	O
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only meaningful if exchOriginCode rolls up to Market Maker	O
reason	Text (255)	Free format text fields, describing why allocation was done	O

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Quote Key: date, exchange, optionID, quoteID
- Trade Key: date, exchange, optionID, tradeID

5.3. Options Order Restatement Event

Options orders that persist across business days (e.g., GTC orders) must be restated each day before any other activity is reported for that symbol. The restatement is an explicit confirmation that the order is still active in the reporter's order book, and also provides an opportunity to use per-day unique order IDs for all orders.

The attributes of the order will be restated in terms of the order's current state, after any corporate actions have been processed. Pursuant to each exchange's rule book, some corporate action types dictate that persisted orders will be canceled or converted. If converted, the order restatement field values should reflect the adjusted values on the effective date (e.g., if a 2:1 split occurred, the quantity and price would reflect the resulting change).

The following fields will not be included if restating a complex option order, but are otherwise required: openCloseIndicator, orderType, exchOriginCode, coverage, executingFirm.

Table 58: Options Order Restatement

Field Name	Data Type	Description	Include Key
type	Message Type	OORS	R
exchange	Exchange ID	The identifier for the exchange which has received this order	R
eventTimestamp	Timestamp	The date/time when the order was restated	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange	R
originalOrderDate	Date	The most recent trading day for which the order was active. Note that this may not be the date when the order was originally accepted. If the order has been active for multiple trading days, this field must reference the previous trading day when the order was active	R

Field Name	Data Type	Description	Include Key
originalOrderID	Text (40)	The most recent internal order ID that was assigned to the order before the Restatement Event. If the orderID has not changed, then orderID and originalOrderID must be equivalent. Note this requirement is different from modification events	R
side	Choice	The side of the order: See entry for "Side" in the Data Dictionary for acceptable values	R
price	Price	The limit price of the order, if applicable. Adjusted following corporate action, if applicable	C
quantity	Unsigned	The order quantity, as adjusted for a corporate action, if applicable	R
displayQty	Unsigned	The display quantity, as adjusted for a corporate action, if applicable	R
displayPrice	Price	The displayed price for this order (required if displayQty is greater than zero)	C
workingPrice	Price	The working price of the order	C
leavesQty	Unsigned	The quantity of the order that remains open, as adjusted for a corporate action, if applicable	C
openCloseIndicator	Choice	the position of the order: either Open, Close, or Unspecified	C
orderType	Choice	The order type is one of several possible pre-defined order types. There are a few general order type codes, and several codes unique for each exchange. See the corresponding entry in the Data Dictionary for more details about order types	C
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a complex list of acceptable values	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order, that are not necessarily handling instructions	C
exchOriginCode	Choice	Exchange defined code designating the origin of the order, see data dictionary for list of acceptable values	C
coverage	Choice	Specifies whether the order is covered or uncovered. This field may also be filled in as unspecified. See the data dictionary for a list of acceptable values	C
executingFirm	Alphanumeric(8)	The OCC number of the executing/give-up firm	C
cmtaFirm	Alphanumeric(8)	The OCC number of the CMTA firm (only valid for CMTA trades)	C

Field Name	Data Type	Description	Include Key
member	Member Alias	The identifier for the member firm that is responsible for the order	R
mktMkrSubAccount	Text (20)	The sub-account for the market maker, only valid when Origin Code is Market Maker	C

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, orderID
- Previous Order Key: originalOrderDate, exchange, optionID, originalOrderID

5.4. Options Trade Break Event

When a trade is broken, an event is reported to CAT with the appropriate information. Note that CAT adds the event to the history of the order. The broken trade is not removed from the history, as it is something that actually happened and should be recorded.

Table 59: Options Trade Break

Field Name	Data Type	Description	Include Key
type	Message Type	OTB	R
exchange	Exchange ID	The ID for the exchange on which the trade took place	R
eventTimestamp	Timestamp	The date/time of the break event	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
tradeDate	Date	The date on which the trade being broken occurred	R
tradeID	Text (40)	The ID for the trade that is being broken. This must match a previously reported trade	R
quantity	Unsigned	If the full quantity is being broken, then this field can be omitted. Otherwise, this represents the quantity of the original trade that is being broken	O
reason	Text (255)	Free format text field, with the reason for the break	O

Lifecycle keys for this event:

- Trade Key: tradeDate, exchange, optionID, tradeID

5.5. Options Trade Correction Event

If a trade is corrected in any way, a correction event must be reported to CAT with all details of the trade, after having been corrected. This event must capture the entire state of the trade after having been corrected.

As with trade breaks, CAT will still keep the original trade, adding the correction to the audit trail of the trade being corrected.

Table 60: Options Trade Correction

Field Name	Data Type	Description	Include Key
type	Message Type	OTC	R
exchange	Exchange ID	The ID of the participant reporting the trade event to CAT	R
eventTimestamp	Timestamp	The date/time when the trade correction occurred	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps	C
seqNumSub	Text (10)	A sequence number subsystem identifier	C
tradeID	Text (40)	An identifier for the trade being corrected	R
refTradeID	Text (40)	The trade being referenced. Used to link corrections if trade corrections can assign new identifiers to trades. If included, refTradeID must reference a previously reported trade, or a previously reported trade correction that has a matching tradeID	C
optionID	Text (40)	The ID of the option being traded	R
quantity	Unsigned	Quantity of the trade	R
price	Price	Price of the trade	R
saleCondition	Text (8)	Conditions under which trade was executed	C
executionCodes	Name / Value Pairs	Adds special exchange specific codes to an execution. Zero or more codes can be entered to provide additional execution information, like where a trade may have been executed on the floor. These codes apply to both sides of the trade	C
executionTimestamp	Timestamp	The date/time of the execution, applicable only when the execution time was corrected	O
reason	Text (255)	Free format text field, describing the reason why the correction was made	O

Field Name	Data Type	Description	Include Key
buyDetails	Side Trade Details	Information for the buy side of the trade. Format and element definitions for Buy Details are described in Side Trade Event – Table 54	O
sellDetails	Side Trade Details	Information for the buy side of the trade. Format and element definitions for Sell Details are described in Side Trade Event – Table 54	O

Lifecycle keys for this event:

- Order Key: date, exchange, optionID, buyDetails.orderID
- Order Key: date, exchange, optionID, sellDetails.orderID
- Route Link Key: date, optionID, exchange, buyDetails.routedOrderID
- Route Link Key: date, optionID, exchange, sellDetails.routedOrderID
- Quote Key: date, exchange, optionID, buyDetails.quoteID
- Quote Key: date, exchange, optionID, sellDetails.quoteID
- Trade Key: date, exchange, optionID, tradeID
- Trade Key: date, exchange, optionID, refTradeID

5.6. Options Floor Broker Events

The options floor participant event captures instances when an order routed by the matching engine to a floor participant is returned to the matching engine. The floor participant has the option to request the return of the order, or to permanently relinquish the order to the matching engine.

5.6.1. Floor Participant Event

Table 61: Floor Participant

Field Name	Data Type	Description	Include Key
type	Message Type	OFP	R
exchange	Exchange ID	The ID for the exchange that reported the event.	R
eventTimestamp	Timestamp	The date/time the matching engine was checked.	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps.	R
seqNumSub	Text (10)	A sequence number subsystem identifier assigned to the system that rejected the message. Required if different systems that reject messages do not share the same message sequencing process.	C

Field Name	Data Type	Description	Include Key
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory.	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange.	R
routingParty	Text (20)	The ID string used to identify the floor participant who sent this routed order.	R
routedOrderID	Text (40)	The ID assigned to this order when the floor participant submits the order to the exchange.	R
routedOriginalOrderID	Text (40)	The routedOrderID for the OFP being modified.	C
session	Text (40)	The name of the session used to send the order from the floor participant to the matching engine.	R
side	Choice	The side of the order: See entry for "side" in the Data Dictionary for acceptable values.	R
price	Price	Limit price for the event, which may be different than the limit price for the order. Required unless the Order Type precludes a price.	C
quantity	Unsigned	Quantity of the event. May be different from both the order qty and the leaves qty for the order.	R
displayQty	Unsigned	The displayed quantity for this event	R
displayPrice	Price	Display price for the event. Required if displayQty is non-zero.	C
workingPrice	Price	Working Price of the event.	C
orderType	Choice	See the corresponding entry in the Data Dictionary for more details about order types. Required if the event has a different orderType from the order.	C
timeInForce	Choice	Time-in-Force for the event. See the Data Dictionary for a complete list of acceptable values.	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details. Instructions presented here should include instructions added by the Floor Participant, if any.	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions. Attributes presented here should include instructions added by the Floor Participant, if any.	C

Field Name	Data Type	Description	Include Key
member	Member Alias	The identifier for the member firm that is responsible for the order	R
nbbPrice	Price	NBBO at the moment just before the event is accepted by the matching engine.	R
nbbQty	Unsigned		O
nboPrice	Price		R
nboQty	Unsigned		O
complexOrderID	Text (40)	The Order ID for the parent complex order, if this event represents a leg of a complex order.	C
complexOptionID	Text (40)	The optionID for the parent complex order, if this event represents a leg of a complex order. Not reported if the complex order's orderID is globally unique	C

Lifecycle Keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair)
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.6.2. Complex Floor Participant Event

Table 62: Complex Floor Participant

Field Name	Data Type	Description	Include Key
type	Message Type	OCFP	R
exchange	Exchange ID	The ID for the exchange.	R
eventTimestamp	Timestamp	The date/time the matching engine was checked.	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps.	R
seqNumSub	Text (10)	A sequence number subsystem identifier assigned to the system that rejected the message. Required if different systems that reject messages do not share the same message sequencing process.	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange.	R

Field Name	Data Type	Description	Include Key
routingParty	Text (20)	The ID string used to identify the entity or individual who sent this routed order.	R
routedOrderID	Text (40)	The ID assigned to this order by the routing firm when submitting the order to the exchange	R
routedOriginalOrderID	Text (40)	The routed ID for the OCFB being modified.	C
session	Text (40)	The name of the session used to send the order from the floor participant to the exchange.	R
side	Choice	The side of the order, for a complex order the values for side can be either "AsDirected" or "Opposite", see entry for "Side" in the Data Dictionary for acceptable values.	R
price	Price	The net price of the order, which may be negative.	C
quantity	Unsigned	Quantity of the event.	R
timeInForce	Choice	Time-in-Force for the event. See the Data Dictionary for a complete list of acceptable values.	R
handlingInstructions	Name / Value Pairs	The handling instructions field contains one or more instruction codes from the pre-defined list of order handling instructions. See the documentation in the Data Dictionary for more details. Instructions presented here should include instructions added by the Floor Participant, if any.	C
orderAttributes	Name/Value Pairs	Defines reportable attributes of an order that are not necessarily handling instructions. Attributes presented here should include instructions added by the Floor Participant, if any.	C
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle Keys for this event:

- Order Key: date, exchange, optionID, orderID
- Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair)
- Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
- Complex Order Key: date, exchange, [complexOptionID,] complexOrderID

5.6.3. Return to Floor Participant Event

Table 63: Return to Floor Participant

Field Name	Data Type	Description	Include Key
type	Message Type	ORFP	R
exchange	Exchange ID	The ID for the exchange.	R
eventTimestamp	Timestamp	The date/time the matching engine was checked.	R
sequenceNumber	Unsigned	The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps.	R
seqNumSub	Text (10)	A sequence number subsystem identifier assigned to the system that rejected the message. Required if different systems that reject messages do not share the same message sequencing process.	C
optionID	Text (40)	The ID previously assigned to this option in the reporter's option directory	R
orderID	Text (40)	The internal order ID assigned to the order by the exchange. If a leg is being canceled, the orderID will represent the leg order being canceled	R
cancelQty	Unsigned	The quantity being canceled	R
leavesQty	Unsigned	The quantity left open after the cancel event (zero for a full cancel)	R
initiator	Choice	Indicates who initiated the order cancellation: See entry for "initiator" in the Data Dictionary for acceptable values	R
cancelReason	Choice	Code representing the reason why the order was returned to the Floor Participant. The actual value of the code is exchange specific. See Data Dictionary for the list of allowed values	O
member	Member Alias	The identifier for the member firm that is responsible for the order	R

Lifecycle Keys for this event:

- Order Key: date, exchange, optionID, orderID

5.7. Lifecycle Keys

The lifecycle keys for each event are summarized in the following table.

Table 64: Section 5 Lifecycle Keys

Section	Event	Lifecycle Keys
5.1.1	Quote	Quote Key: date, exchange, optionID, quoteID Previous Quote Key: date, exchange, optionID, originalQuoteID
5.1.2	Quote Cancel	Quote Key: date, exchange, optionID, quoteID
5.2.1.1	Simple Option Order Accepted	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, orderID, pairedOrderID (if populated in order attributes name value pair) Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
5.2.1.2	Complex Option Order Accepted	Order Key: date, exchange, [optionID,] orderID Cross Order Key: date, exchange, [optionID,] orderID, pairedOrderID (if populated in order attributes name value pair) Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
5.2.1.3	Stock Leg Order	Order Key: date, exchange, symbol, orderID Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
5.2.2.1	Option Order Modified	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, orderID, pairedOrderID (if populated in order attributes name value pair) Previous Order Key: date, exchange, optionID, originalOrderID Complex Order Key: date, exchange, [complexOptionID,] complexOrderID Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session
5.2.2.2	Complex Option Order Modified	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair) Previous Order Key: date, exchange, optionID, originalOrderID Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session
5.2.2.3	Stock Leg Modified	Order Key: date, exchange, symbol, orderID Previous Order Key: date, exchange, symbol, originalOrderID Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
5.2.2.4	Option Order Adjusted	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair) Previous Order Key: date, exchange, optionID, originalOrderID Complex Order Key: date, exchange, [complexOptionID,] complexOrderID Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session
5.2.2.5	Complex Option Order Adjusted	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair) Previous Order Key: date, exchange, optionID, originalOrderID Route Link Key: date, optionID, routedOrderID, exchange
5.2.2.6	Stock Leg Adjusted	Order Key: date, exchange, symbol, orderID

Section	Event	Lifecycle Keys
		Previous Order Key: date, exchange, symbol, originalOrderID Complex Order Key: date, exchange, [complexOptionID,] complexOrderID Route Link Key: date, optionID, routedOrderID, exchange, routingParty, session
5.2.3	Option Order Canceled	Order Key: date, exchange, optionID, orderID Order Key: date, exchange, symbol, orderID
5.2.4.2	Option Route	Order Key: date, exchange, optionID, orderID Order Key: date, exchange, symbol, orderID Route Link Key: date, optionID, routingParty, routedOrderID, exchange Route Link Key: date, symbol, routingParty, routedOrderID, exchange Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
5.2.4.3	Internal Option Route	Order Key: date, exchange, optionID, orderID Order Key: date, exchange, symbol, orderID Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange Route Link Key: date, symbol, routingParty, routedOrderID, session, exchange Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
5.2.4.4	Internal Complex Option Route	Order Key: date, exchange, optionID, orderID Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange
5.2.4.5	Modify Option Route	Order Key: date, exchange, optionID, orderID Order Key: date, exchange, symbol, orderID Route Link Key: date, optionID, routingParty, routedOrderID, exchange Route Link Key: date, symbol, routingParty, routedOrderID, exchange Previous Route Link Key: date, optionID, routingParty, routedOriginalOrderID, exchange Previous Route Link Key: date, symbol, routingParty, routedOriginalOrderID, exchange
5.2.4.6	Option Cancel Route	Order Key: date, exchange, optionID, orderID Order Key: date, exchange, symbol, orderID Route Link Key: date, optionID, routingParty, routedOrderID, exchange Route Link Key: date, symbol, routingParty, routedOrderID, exchange
5.2.5.1	Simple Option Trade	Order Key: date, exchange, optionID, buyDetails.orderID Order Key: date, exchange, optionID, sellDetails.orderID Quote Key: date, exchange, optionID, buyDetails.quoteID Quote Key: date, exchange, optionID, sellDetails.quoteID Trade Key: date, exchange, optionID, tradeID
5.2.5.2	Stock Leg Fill	Order Key: date, exchange, symbol, orderID Fill Key: date, exchange, symbol, fillID
5.2.6	Post Trade Allocation	Order Key: date, exchange, optionID, orderID Quote Key: date, exchange, optionID, quoteID Trade Key: date, exchange, optionID, tradeID
5.3	Option Order Restatement	Order Key: date, exchange, optionID, orderID Previous Order Key: originalOrderDate, exchange, optionID, originalOrderID

Section	Event	Lifecycle Keys
5.4	Option Trade Break	Trade Key: tradeDate, exchange, optionID, tradeID
5.5	Option Trade Correction	Order Key: date, exchange, optionID, buyDetails.orderID Order Key: date, exchange, optionID, sellDetails.orderID Route Link Key: date, optionID, exchange, buyDetails.routedOrderID, buyDetails Route Link Key: date, optionID, exchange, sellDetails.routedOrderID, Quote Key: date, exchange, optionID, buyDetails.quoteID Quote Key: date, exchange, optionID, sellDetails.quoteID Trade Key: date, exchange, optionID, tradeID
6.2.1	Floor Participant	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair) Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
6.2.2	Complex Floor Participant	Order Key: date, exchange, optionID, orderID Cross Order Key: date, exchange, optionID, orderID, pairedOrderID (if populated in order attributes name value pair) Route Link Key: date, optionID, routingParty, routedOrderID, session, exchange Complex Order Key: date, exchange, [complexOptionID,] complexOrderID
6.2.3	Return to Floor Participant	Order Key: date, exchange, optionID, orderID

6. Other Reporting

6.1. FINRA Reporting of TRF/ORF/ADF Transaction Data

Transactions in Eligible Securities reported to a FINRA trade reporting facility must be reported to CAT by FINRA as a CSV using the fields described in Appendix D: FINRA TRF Fields.

6.2. FINRA Reporting of OTCBB Quote Data

OTC Bulletin Board quote data must be reported to CAT by FINRA as a CSV with the following fields:

Table 65: OTC BB Quote Elements

Field Name	Data Type	Description	Include Key
type	Message Type	OTCBB	R
ORGNL_TRADE_DT	Date	Original date when the trade occurred	R
QUOTE_TM	Time	Entry time of the quote update. Set to '000000.000000' for SOD Records.	C
MDS_SRC_CD	Choice	Values are: SOD – from the Start-of-day Issues File UPD (AUD) – Update records from the Audit File EOD – records from the End-of-day Issue file.	R
ISSUE_SYM_ID	Symbol	Security Identifier	R
ISSUE_TYPE_CD	Choice	Identifies the Issue Type. Values are: Security Category. Values are: I = Issue Type is "X" (Exempt Foreign) or "Z" (Exempt ADR). L = Issue Type is "L" (Limited Partnership). K = All other Issue Type.	R
MP_ID	Member Alias	Market Maker identifier.	O
MP_PRCS_STATE_CD	Choice	Values are: A = Active D = Deleted S = Suspended W = Withdrawn E = Excused Withdrawn	R
MSG_TYPE_CD	Choice	A code identifying the type of message for the record.	C

Field Name	Data Type	Description	Include Key
		Values include: 0 - Quote Update or Quote Inside 1 - Issue Halt 3 - Start of Day Message	
REC_TYPE_CD	Choice	Values are: 1 - No change to the inside 2 - Inside does not exist 3 - Inside changed NULL - on SOD, EOD messages	C
MP_OPEN_CLS_CD	Choice	Values are: O = MP Open C = MP Close	R
MP_FIRM_BID_FL	Choice	Indicates whether the bid price is firm or not Y - Bid price is firm N - Bid price is not firm	O
MP_BID_PR	Price	MP Bid Price	O
MP_BID_WNTD_FL	Choice	Indicates whether an bid is wanted Values include: Y - Bid Wanted N - Bid Not Wanted, actual price	O
MP_FIRM_ASK_FL	Choice	Indicates whether the ask price is firm or not. Y - Ask price is firm N - Ask price is not firm	O
MP_ASK_PR	Price	MP Ask Price	O
MP_ASK_WNTD_FL	Choice	Indicates whether an ask is wanted Values include: Y - Ask Wanted N - Ask Not Wanted, actual price	O
MP_BID_SZ_QT	Unsigned	The number of shares, which the MP is willing to buy at its currently quoted bid price.	O
MP_ASK_SZ_QT	Unsigned	The number of shares, which the MP is willing to sell at its currently quoted ask price.	O
USLTC_QUOTE_CD	Choice	Values are: U = Unsolicited Bid and Ask A = Unsolicited Ask B = Unsolicited Bid	O

Field Name	Data Type	Description	Include Key
		Space = Not Unsolicited	
TRMNL_ID	Text (4)	I1I2 Identifier	O
MP_LC_CD	Choice	MP Location Indicator. Values are: A, B,C, D, E, F, I, J, K, L, M, N, P, R, S, T, U	O
MSG_ID	Unsigned	Message sequence number for intraday records. Null for SOD and EOD records.	C

6.3. FINRA Reporting of Halt/Resume Data

Halt/resume data must be reported to CAT by FINRA as a CSV with the following fields:

Table 66: FINRA Halt/Resume

Field Name	Data Type	Description	Include Key
type	Message Type	FHR	R
SYM_CD	Symbol	Symbol of the issue being halted or resumed.	R
SCRTY_DS	Text (250)	Security Description	R
OTCBB_QUOTE_FL	Choice	Indicates whether the security is quoted on the Over the Counter Bulletin Board; valid values: Y, N	R
ORGNG_RGLTR_CD	Choice	If the Halt or Resume is initiated by the SEC, this value will be set to SEC; otherwise, it will be null.	O
HALT_ACTN_CD	Choice	Identifies the action as a Halt, Quote Resume, or Trade Resume; corresponding descriptions are provided in the HALT_ACTN_DS column. Valid values: H Q T	R
HALT_ACTN_DS	Choice	Halt Action Description; valid values: Halt Quote Resume Trade Resume	R
HALT_ACTN_TS	Timestamp	This is the date/time the halt is initiated. YYYYMMDDHHMMSS	R
TRADE_RSM_TS	Timestamp	This is the date/time trading in the symbol is resumed. YYYYMMDDHHMMSS	O
QUOTE_RSM_TS	Timestamp	This is the date/time quoting in the symbol is resumed. YYYYMMDDHHMMSS Please note: Quote Resume Timestamps will only be provided in	O

Field Name	Data Type	Description	Include Key
		the event that a quote only window is opened prior to the resumption of trading.	
HALT_RSN_CD	Choice	Halt Action Codes identify the reason the security is being halted or resumed; corresponding descriptions are provided in the HALT_RSN_DS column. Valid values: D1 F1 H10 H12 O1 T3 U1 U2 U3 U4 U5 C11 C13 C14 CXL	O
HALT_RSN_DS	Text (75)	Halt Reason Description; valid values: Security Deleted from OTCE Operations Halt, Contact Market Operations Halt - SEC Trading Suspension Halt - SEC Revocation Operations Halt, Contact Mkt Ops Halt - News and Resumption Times Halt - Foreign Market/Regulatory Halt - Component/Derivative of Exchange-Listed Security Halt - Extraordinary Events (EMC) EMC Market-wide Circuit Breaker Halt Trade Halt Concluded by Other Regulatory Authority; Quotes/Trades to Resume Quote Only Resume for EMC and MWCB Quote and Trade Resume for EMC and MWCB Cancel pending action Reason not available	O

Field Name	Data Type	Description	Include Key
CRTD_DT	Date	The date the action (Halt, Quote Resume or Trade Resume) is initiated. MM/DD/YYYY	R

7. Stock Exchange Event Examples

7.1. Order Accepted Event Example

This section will illustrate examples for an order accepted event, an order modified event, and an order canceled event using the following scenario: A new order is routed to the exchange, accepted by the exchange, updated by the firm that sent the order, and is finally canceled by the exchange.

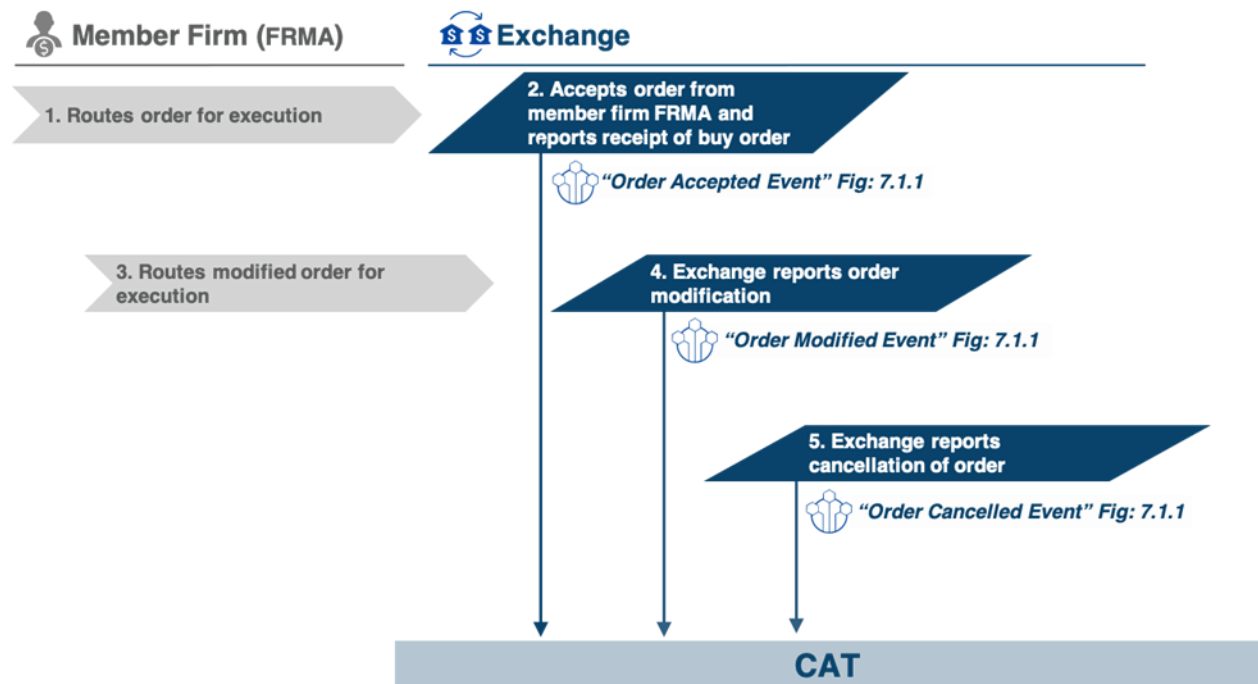


Figure 4: Order Event Lifecycle Example

Table 67: Order Event Lifecycle Example

#	Step	Reported Event	Comments
1	Member Firm Routes order for Execution	NA	A member firm routes an order to Exchange "Exch1" over session ID 7 with the order ID of 2156. This order is a buy order for the symbol ABCD, with a quantity of 300

#	Step	Reported Event	Comments
2	Exchange accepts the order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170307T103242.123456789 sequenceNumber: 11133 symbol: ABCD orderID: 98765 routingParty: FRMA routedOrderID: 2156 session: 7 side: Buy price: 157.00 quantity: 300 displayQty: 300 displayPrice: 157.00 workingPrice: 157.00 orderType: LMT timeInForce: GTT capacity: Principal handlingInstructions: XTIME=20170315T123456.123456789 nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.25 nboQty: 100 member: Mem01	- The exchange accepts the buy order and assigns it the internal order ID: 98765. - The ID that was used by the member firm is included as the Routed Order ID because Time in Force = GTC, the order expires at a particular time: requires XTIME - In handling instructions to provide the order's expire time. The NBBO is as the exchange saw it just before accepting the order. Note that after accepting the order, the aggregate NBB quantity would go up by 300 to account for this order, which is at the NBB price.
3	Member routes a modification of the order to the exchange	NA	The member firm modifies their existing order, increasing the price to 157.01
4	Exchange modifies order	Order Modified Event: type: EOM exchange: Exch1 eventTimestamp: 20170307T103350.123456789 sequenceNumber: 11140 symbol: ABCD orderID: 99564 originalOrderID: 98765 initiator: Firm nbbPrice: 157.00 nbbQty: 400 nboPrice: 157.25 nboQty: 100 price: 157.01 displayPrice: 157.01 workingPrice: 157.01 side: Buy	- The exchange reports a firm-initiated modification to the order described in the previous section. In this case, the price of the order is increased to 157.01. - Some exchanges assign a new internal order ID after an update, in this case The new internal order ID is 99564

#	Step	Reported Event	Comments
		quantity: 300 displayQty: 300 leavesQty: 300 orderType: LMT timeInForce: GTT capacity: Principal handlingInstructions: XTIME=20170315T123456.123456789 member: Mem01	
5	Exchange cancels the order	Order Canceled Event: type: EOC exchange: Exch1 eventTimestamp: 20170307T103552.000001089 sequenceNumber: 11453 symbol: ABCD orderID: 99564 cancelQty: 300 leavesQty: 0 initiator: Exchange member: Mem01	• The order has passed its expiration time and is canceled by the exchange • Initiator value = exchange given that the XTIME has passed

7.1.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T103242.123456789",
  "sequenceNumber": 11133,
  "symbol": "ABCD",
  "orderID": "98765",
  "routingParty": "FRMA",
  "routedOrderID": "2156",
  "session": "7",
  "side": "Buy",
  "price": 157.00,
  "quantity": 300,
  "displayQty": 300,
  "displayPrice": 157.00,
  "workingPrice": 157.00,
  "orderType": "LMT",
  "timeInForce": "GTT",
  "capacity": "Principal",
  "handlingInstructions": "XTIME=20170315T123456.123456789",
  "nbbPrice": 157.00,
  "nbbQty": 100,
  "nboPrice": 157.25,
```

```
"nboQty": 100,  
"member": "Mem01"  
}
```

Order Modified Event

```
{  
  "type": "EOM",  
  "exchange": "Exch1",  
  "eventTimestamp": "20170307T103350.123456789",  
  "sequenceNumber": 11140,  
  "symbol": "ABCD",  
  "orderID": "99564",  
  "originalOrderID": "98765",  
  "side": "Buy",  
  "quantity": 300,  
  "displayQty": 300,  
  "orderType": "LMT",  
  "timeInForce": "GTT",  
  "handlingInstructions": "XTIME=20170315T123456.123456789",  
  "initiator": "Firm",  
  "price": 157.01,  
  "displayPrice": 157.01,  
  "workingPrice": 157.01,  
  "leavesQty": 300,  
  "capacity": "Principal",  
  "nbbPrice": 157.00,  
  "nbbQty": 400,  
  "nboPrice": 157.25,  
  "nboQty": 100,  
  "member": "Mem01"  
}
```

Order Canceled Event

```
{  
  "type": "EOC",  
  "exchange": "Exch1",  
  "eventTimestamp": "20170307T103552.000001089",  
  "sequenceNumber": 11453,  
  "symbol": "ABCD",  
  "orderID": "99564",  
  "cancelQty": 300,  
  "leavesQty": 0,  
  "initiator": "Exchange",  
  "member": "Mem01"  
}
```

7.2. Order Trade Event Example

This section will demonstrate a trade event example that occurs after a buy and sell order are matched. In this case, a sell order is accepted for a price of 157.20 and quantity of 100. A buy order is then accepted for a price of 157.20 and quantity of 100. The two orders are matched and a trade event is reported.

In this scenario, the exchange is required to report the following events to CAT:

1. Order Accepted Events from each of the orders; and
2. Order Trade Event

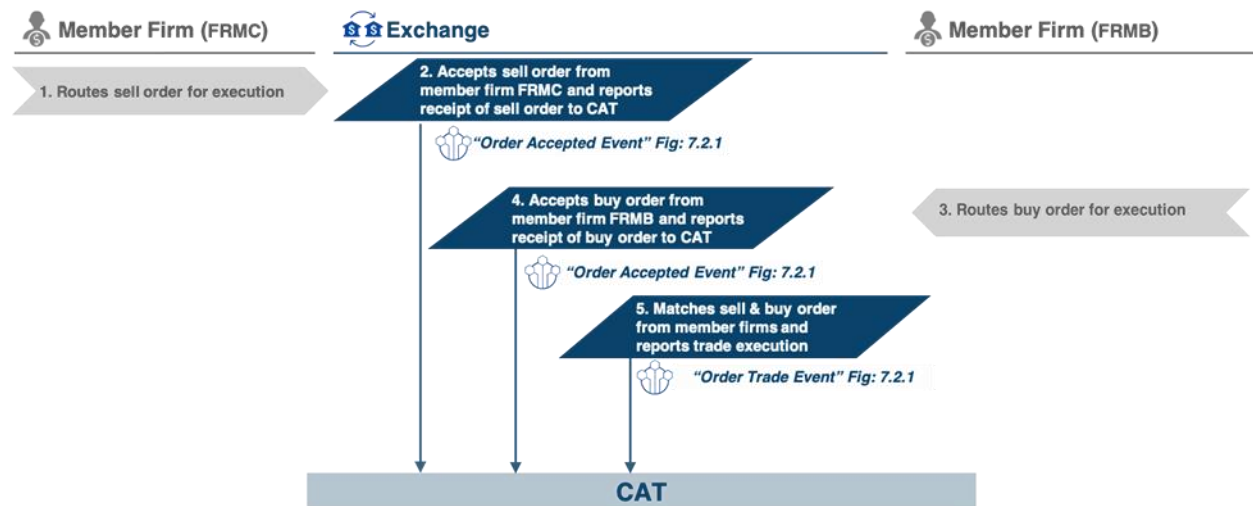


Figure 5: Order Trade Event Example

Table 68: Trade Event Example

#	Step	Reported Event	Comments
1	Member Firm FRMC Routes sell order for execution	NA	A member firm routes a sell order to Exchange "Exch1" over session ID FRMC:123 with the order ID of 2156. This order is a sell order for the symbol ABCD, with a quantity of 100
2	Exchange accepts the sell order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170307T134000.123456	The exchange accepts the sell order and assigns it the internal order ID: 10999. The order type is a limit order

#	Step	Reported Event	Comments
		sequenceNumber: 12345 symbol: ABCD orderID: 10999 routingParty: FRMC routedOrderID: 2156 session: FRMC:123 side: Sell price: 157.20 quantity: 100 displayQty: 100 displayPrice: 157.20 workingPrice: 157.20 orderType: LMT timeInForce: DAY capacity: Agency nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.25 nboQty: 100 member: Mem01	with time in force = day. The ID that was used by the member firm is included as the Routed Order ID The NBBO is as the exchange saw it just before accepting the order. Note that after accepting the order, the national best offer would change to account for this order, which is below the national best offer.
3	Member Firm FRMB Routes buy order for execution	NA	A member firm FRMB routes a buy order to Exchange "Exch1" over session ID 7 with the order ID of 9150. This order is a buy order for the symbol ABCD, with a quantity of 100
4	Exchange accepts the buy order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170307T134001.123456 sequenceNumber: 19190 symbol: ABCD orderID: 20263 routingParty: FRMB routedOrderID: 9150 session: 7 side: Buy price: 157.20 quantity: 100 displayQty: 0 workingPrice: 157.20 orderType: LMT timeInForce: DAY capacity: Principal nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.20	- The exchange accepts the buy order and assigns it the internal order ID: 20263. The order type is a limit order with time in force = day. - The ID that was used by the member firm is included as the Routed Order ID - The NBBO is as the exchange saw it just before accepting the order.

#	Step	Reported Event	Comments
		nboQty: 100 member: Mem02	
5	Exchange matches buy and sell order and the trade is executed	Order Trade Event: type: EOT exchange: Exch1 eventTimestamp: 20170307T134001.125456 sequenceNumber: 19191 symbol: ABCD tradeID: 19900422 quantity: 100 price: 157.20 saleCondition: E@ nbbPrice: 157.00 nbbQuantity: 100 nboPrice: 157.20 nboQuantity: 100 buyDetails side: Buy leavesQty: 0 orderID: 20263 clearingNumber: 5656 capacity: Principal liquidityCode: Removed member: Mem02 sellDetails side: Sell leavesQty: 0 orderID: 10999 clearingNumber: 7878 capacity: Agency liquidityCode: Added member: Mem01	The buy and sell orders from the previous steps cross and the exchange initiates the trade, reporting an order trade event to CAT.

7.2.1. JSON Examples

Order Accepted Event: Sell

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T134000.123456",
  "sequenceNumber": 12345,
  "symbol": "ABCD",
  "orderID": "10999",
  "routingParty": "FRMC",
  "routedOrderID": "2156",
```

```

"session": "FRMC:123",
"side": "Sell",
"price": 157.20,
"quantity": 100,
"displayQty": 100,
"displayPrice": 157.20,
"workingPrice": 157.20,
"orderType": "LMT",
"timeInForce": "DAY",
"capacity": "Agency",
"nbbPrice": 157.00,
"nbbQty": 100,
"nboPrice": 157.25,
"nboQty": 100,
"member": "Mem01"
}

```

Order Accepted Event: Buy

```

{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T134001.123456",
  "sequenceNumber": 19190,
  "symbol": "ABCD",
  "orderID": "20263",
  "routingParty": "FRMB",
  "routedOrderID": "9150",
  "session": "7",
  "side": "Buy",
  "price": 157.20,
  "quantity": 100,
  "displayQty": 0,
  "workingPrice": 157.20,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "nbbPrice": 157.00,
  "nbbQty": 100,
  "nboPrice": 157.20,
  "nboQty": 100,
  "member": "Mem02"
}

```

Order Trade Event

```

{
  "type": "EOT",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T134001.125456",
  "sequenceNumber": 19191,
  "symbol": "ABCD",
  "tradeID": "19900422",
  "quantity": 100,
  "price": 157.20,
}

```

```

"saleCondition": "E@",
"nbbPrice": 157.00,
"nbbQty": 100,
"nboPrice": 157.20,
"nboQty": 100,
"buyDetails": {
  "side": "Buy",
  "leavesQty": 0,
  "orderID": "20263",
  "clearingNumber": "5656",
  "capacity": "Principal",
  "liquidityCode": "Removed",
  "member": "Mem02"
},
"sellDetails": {
  "side": "Sell",
  "leavesQty": 0,
  "orderID": "10999",
  "clearingNumber": "7878",
  "capacity": "Agency",
  "liquidityCode": "Added",
  "member": "Mem01"
}
}

```

7.3. Order Route and Order Fill Event Example

This scenario illustrates the reporting requirements to CAT when an exchange routes an order to a routing broker-dealer for execution on an away exchange, and Exchange 1's subsequent reporting obligation on fills of the routed order.

In this scenario Exchange 1 receives and reports acceptance of an order, then routes the order to their routing broker dealer for execution on an away exchange. When an execution occurs on the away exchange, the routing broker reports the fill back to Exchange 1. The following events are reported:

1. Order Accepted Event of the original order,
2. The Order Route Event, and

3. The Order Fill Event.

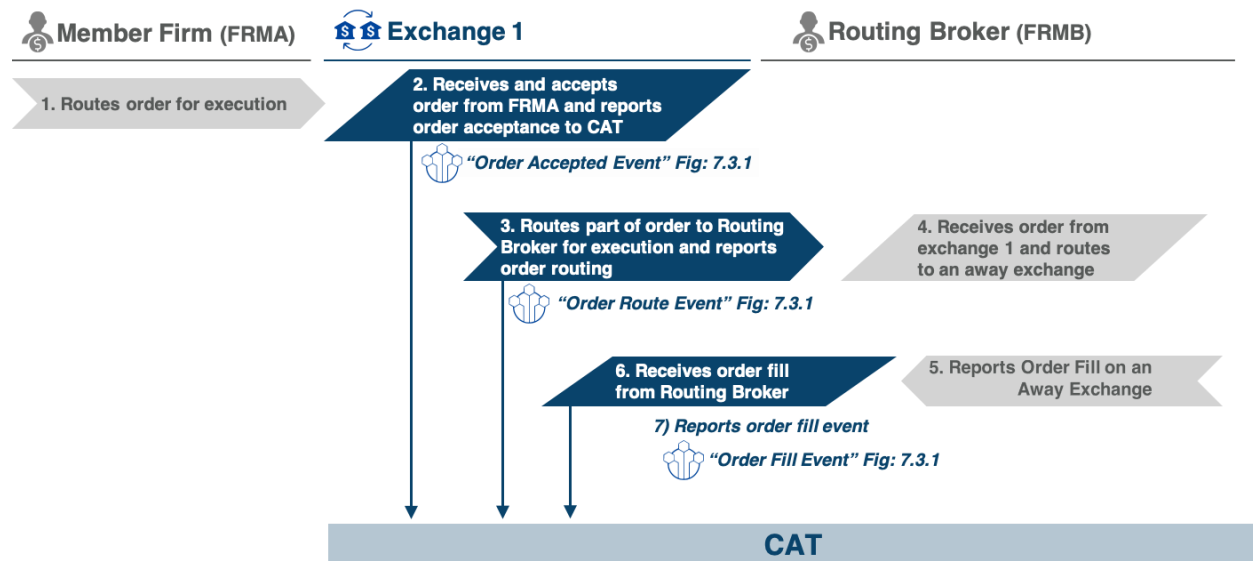


Figure 6: Order Route and Order Fill Event Example

Table 69: Order Route and Order Fill Event Example

#	Step	Reported Event	Comments
1	Member Firm FRMA Routes buy order for execution	NA	A member firm routes a buy order to Exchange "Exch1" over session ID 3 with the order ID of 567890. This order is a buy order for the symbol ABCD, with a quantity of 200 at the price of 157.25
2	Exchange accepts the buy order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170307T144010.123456789 sequenceNumber: 12345 symbol: ABCD orderID: 10001 routingParty: FRMA routedOrderID: 567890 session: 3 side: Buy price: 157.25 quantity: 200 displayQty: 100 displayPrice: 157.25	- The exchange accepts the buy order and assigns it the internal order ID: 10001. The order type is a limit order with time in force = day. - The ID that was used by the member firm is included as the Routed Order ID The NBBO is as the exchange saw it just before accepting the order.

#	Step	Reported Event	Comments
		workingPrice: 157.25 orderType: LMT timeInForce: DAY capacity: Principal nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.25 nboQty: 100 member: Mem01	
3	Exch1 routes part of the order quantity to its routing broker for execution on an away exchange	Route Order Event type: EOR exchange: Exch1 eventTimestamp: 20170307T144010.123457789 sequenceNumber: 12346 symbol: ABCD orderID: 10001 routingParty: FRMB routedOrderID: E123456 session: 5 side: Buy price: 157.25 quantity: 100 displayQty: 0 orderType: LMT timeInForce: IOC capacity: Agency handlingInstructions: ISO R2E=Exch2 result: ACK resultTimestamp: 20170307T144010.124457789 nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.25 nboQty: 100 member: Mem01	• One hundred of the two hundred shares of the order in the previous step are routed to the exchange's routing broker FRMB for execution on an away exchange in order to meet the order protection rule • Routing Firm = FRMB • The Routed Order ID is the new order ID assigned by exchange A and sent to routing firm • Display quantity = 0, this is a non-displayed order • Time in force = IOC, hit the quote or cancel Handling instructions = ISO, inter-market sweep, routed to exchange Exch2
4	Routing broker routes the order to an away exchange		
5	Away exchange fills the order and sends a fill report back to the routing broker		
6	Routing broker receives order fill from away broker and reports order fill on an away exchange to Exch1		
7	Exch1 reports an order fill event	Order Fill Event type: EOF exchange: Exch1	The exchange reports the fill to the member firm that placed the order, and arranges for clearing to flip the shares. The actual trade

#	Step	Reported Event	Comments
		eventTimestamp: 20170307T144010.129456789 sequenceNumber: 15501 fillID: 192834 symbol: ABCD price: 157.25 saleCondition: E@ side: Buy quantity: 100 leavesQty: 100 orderID: 10001 clearingNumber: 9898 contraClearingNumber: 9899 routingParty: FRMB routedOrderID: E123456 session: 3 capacity: Principal member: Mem01	took place on the away exchange, and the transaction between the two firms is handled in clearing.

7.3.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T144010.123456789",
  "sequenceNumber": 12345,
  "symbol": "ABCD",
  "orderID": "10001",
  "routingParty": "FRMA",
  "routedOrderID": "567890",
  "session": "3",
  "side": "Buy",
  "price": 157.25,
  "quantity": 200,
  "displayQty": 100,
  "displayPrice": 157.25,
  "workingPrice": 157.25,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "nbbPrice": 157.00,
  "nbbQty": 100,
  "nboPrice": 157.25,
  "nboQty": 100,
  "member": "Mem01"
}
```

Order Route Event

```
{
  "type": "EOR",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T144010.123457789",
  "sequenceNumber": 12346,
  "symbol": "ABCD",
  "orderID": "10001",
  "routingParty": "FRMB",
  "routedOrderID": "E123456",
  "session": "5",
  "side": "Buy",
  "price": 157.25,
  "quantity": 100,
  "displayQty": 0,
  "orderType": "LMT",
  "timeInForce": "IOC",
  "capacity": "Agency",
  "handlingInstructions": "ISO|R2E=Exch2",
  "result": "ACK",
  "resultTimestamp": "20170307T144010.124457789",
  "nbbPrice": 157.00,
  "nbbQty": 100,
  "nboPrice": 157.25,
  "nboQty": 100,
  "member": "Mem01"
}
```

Order Fill Event

```
{
  "type": "EOF",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T144010.129456789",
  "sequenceNumber": 15501,
  "fillID": "192834",
  "symbol": "ABCD",
  "price": 157.25,
  "side": "Buy",
  "saleCondition": "E@",
  "quantity": 100,
  "leavesQty": 100,
  "orderID": 10001,
  "clearingNumber": "9898",
  "contraClearingNumber": "9899",
  "routingParty": "FRMB",
  "routedOrderID": "E123456",
  "session": "3",
  "capacity": "Principal",
  "member": "Mem01"
}
```

7.4. Order Restatement Example

This series of examples shows a restatement of a GTC order before market open the following day. Also it is assumed that a stock split on the symbol ABCD has taken effect, and that this is reflected in the restatement.

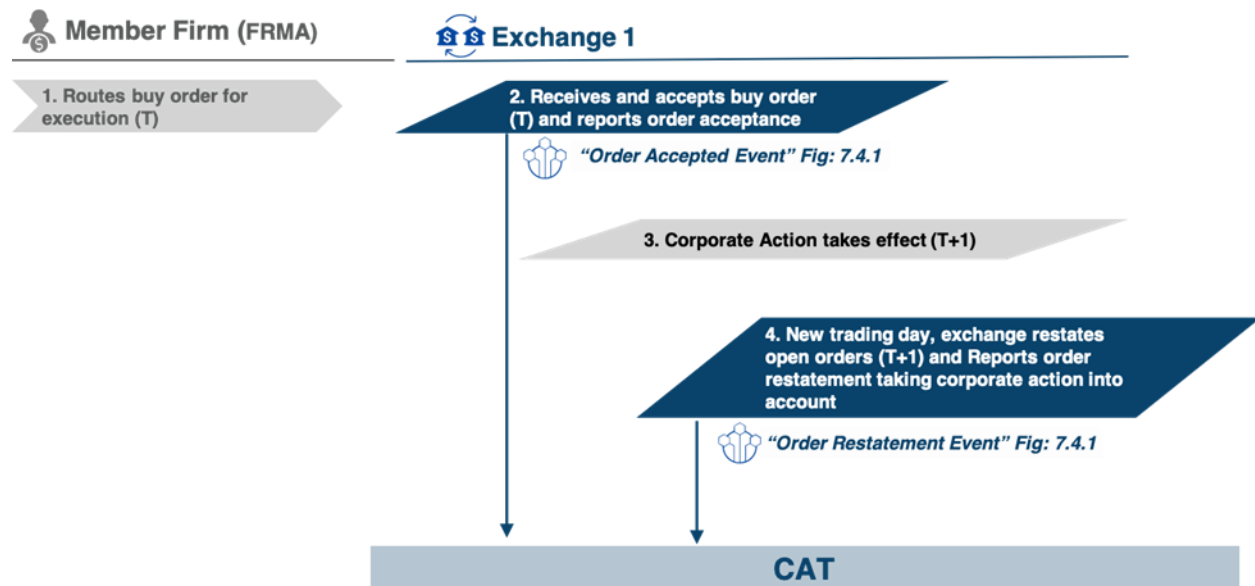


Figure 7: Order Restatement Example

Table 70: Order Restatement Example

#	Step	Reported Event	Comments
1	Member Firm FRMA Routes buy order for execution	NA	A member firm routes a buy order to Exchange "Exch1" over session ID 7 with the order ID of 9153. This order is a buy order for the symbol ABCD, with a quantity of 500 at the price of 156.50
2	Exchange accepts the buy order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170307T134000.123456789 sequenceNumber: 11190 symbol: ABCD orderID: 1201 routingParty: FRMA	- The exchange accepts the buy order and assigns it the internal order ID: 1201. The order type is a limit order with time in force = GTC. - The ID that was used by the member firm

#	Step	Reported Event	Comments
		routedOrderID: 9153 session: 7 side: Buy price: 156.50 quantity: 500 displayQty: 500 displayPrice: 156.50 workingPrice: 156.50 orderType: LMT timeInForce: GTC capacity: Agency nbbPrice: 157.00 nbbQty: 100 nboPrice: 157.25 nboQty: 100 member: Mem01	is included as the Routed Order ID The NBBO is as the exchange saw it just before accepting the order.
3	Corporate action takes effect		A stock split event on the symbol ABCD takes effect 03/08/2017. This event has been reported to CAT by the listing exchange in its native CSV format since the corporate action was declared.
4	Exchanges restates open orders at the new trading day, reporting an Order Restatement Event taking the corporate action into account	Order Restatement Event type: EORS exchange: Exch1 eventTimestamp: 20170308T060000.123456789 sequenceNumber: 11000 symbol: ABCD orderID: 1202 originalOrderDate: 20170307 originalOrderID: 1201 side: Buy price: 78.25 quantity: 1000 displayQty: 1000 displayPrice: 78.25 workingPrice: 78.25 leavesQty: 1000 orderType: LMT timeInForce: GTC capacity: Agency member: Mem01	- This example shows the restatement of the GTC order (Order ID 1201) at market open the following day. In this example we also assume that a hypothetical stock split corporate action on the symbol ABCD has taken effect, and that none of the order has been filled. - Note that the Order ID can remain the same or be assigned anew, depending on how the exchange guarantees uniqueness within the same trading date. Also, the symbol mapping will possibly change from day to day. The symbol mapping for the new date is required. - Note that the quantity of the order has been doubled, and the price has

#	Step	Reported Event	Comments
			been halved to reflect the stock split.

7.4.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170307T134000.123456789",
  "sequenceNumber": 11190,
  "symbol": "ABCD",
  "orderID": "1201",
  "routingParty": "FRMA",
  "routedOrderID": "9153",
  "session": "7",
  "side": "Buy",
  "price": 156.50,
  "quantity": 500,
  "displayQty": 500,
  "displayPrice": 156.50,
  "workingPrice": 156.50,
  "orderType": "LMT",
  "timeInForce": "GTC",
  "capacity": "Agency",
  "nbbPrice": 157.00,
  "nbbQty": 100,
  "nboPrice": 157.25,
  "nboQty": 100,
  "member": "Mem01"
}
```

Order Restatement Event

```
{
  "type": "EORS",
  "exchange": "Exch1",
  "eventTimestamp": "20170308T060000.123456789",
  "sequenceNumber": 11000,
  "symbol": "ABCD",
  "orderID": "1202",
  "origOrderDate": "20170307",
  "origOrderID": "1201",
  "side": "Buy",
  "price": 78.25,
  "quantity": 1000,
  "displayQty": 1000,
  "displayPrice": 78.25,
  "workingPrice": 78.25,
  "leavesQty": 1000,
}
```

```

"orderType": "LMT",
"timeInForce": "GTC",
"capacity": "Agency",
"member": "Mem01"
}

```

7.5. Order Modified Example

This section will show how an order modified event is reported when the order type is changed by the initiating member firm from a limit order to a market order. This series of events will follow the submission of a limit order from a member firm to the exchange that is subsequently modified by the member firm.

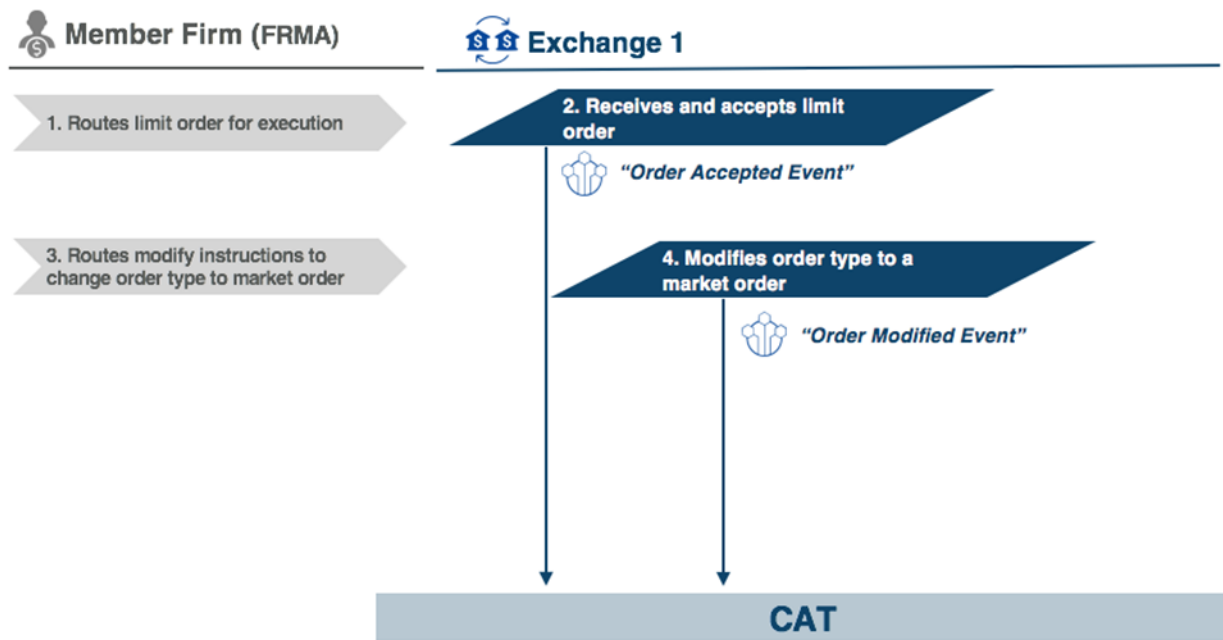


Figure 8: Order Modified Example

Table 71: Order Modified Example

#	Step	Reported Event	Comments
1	Member Firm Routes limit order for Execution		A member firm routes an order to Exchange Exch1 over session ID 12 with the order ID of 1112. This order is a limit order for the symbol ABCD, with a quantity of 100

#	Step	Reported Event	Comments
2	Exchange accepts the order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170402T093001.123456789 sequenceNumber: 1001 symbol: ABCD orderID: 98222 routingParty: FRMA routedOrderID: 1112 session: 12 side: Buy price: 10.03 quantity: 100 displayQty: 100 displayPrice: 10.03 workingPrice: 10.03 orderType: LMT timeInForce: DAY capacity: Principal nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01	- The exchange accepts the order and assigns it the internal order ID: 98222. - This is order is a limit order with a limit price of 10.03
3	Member Firm Routes modify instructions to Exchange to modify order to a Market Order		routedOrderID = 1113 for modification to the firm order
4	Firm initiated new routedOrderID updates the order and reports an order modified event to CAT	Order Modified Event: type: EOM exchange: Exch1 eventTimestamp: 20170402T093055.123456789 sequenceNumber: 1091 symbol: ABCD orderID: 1_98222 originalOrderID: 98222 initiator: Firm side: Buy quantity: 100 displayQty: 100 displayPrice: 10.05 workingPrice: 10.05 leavesQty: 100 orderType: MKT timeInForce: DAY capacity: Principal nbbPrice: 10.00	- The exchange modifies the original order from a limit order to a market order (with no price) as initiated by FRMA - The modification results in a new order ID for the internal order. - In addition, the exchange reports to CAT the routedOrderID from the fix ClOrdID sent in to modify the order.

#	Step	Reported Event	Comments
		nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01 routedOrderId: 1113	

7.5.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093001.123456789",
  "sequenceNumber": 1001,
  "symbol": "ABCD",
  "orderID": "98222",
  "routingParty": "FRMA",
  "routedOrderID": "1112",
  "session": "12",
  "side": "Buy",
  "price": 10.03,
  "quantity": 100,
  "displayQty": 100,
  "displayPrice": 10.03,
  "workingPrice": 10.03,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "nbbPrice": 10.00,
  "nbbQty": 100,
  "nboPrice": 10.05,
  "nboQty": 100,
  "member": "Mem01"
}
```

Order Modified Event

```
{
  "type": "EOM",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093055.123456789",
  "sequenceNumber": 1091,
  "symbol": "ABCD",
  "orderID": "1_98222",
  "originalOrderID": "98222",
  "initiator": "Firm",
  "side": "Buy",
  "quantity": 100,
  "displayQty": 100,
  "displayPrice": 10.05,
}
```

```

"workingPrice": 10.05,
"leavesQty": 100,
"orderType": "MKT",
"timeInForce": "DAY",
"capacity": "Principal",
"nbbPrice": 10.00,
"nbbQty": 100,
"nboPrice": 10.05,
"nboQty": 100,
"member": "Mem01",
"routedOrderId": "1113"
}

```

7.6. Order Modified for because of Partial Fill at Away Exchange

This Example is for an Equity Order Modify event where the exchange routes the order to an away exchange with a better market, and partially executes. The Order Modified Event is for the liquidity returned to the exchange after a partial execution. This example is to show how to populate the routedOrderId in the Equity Order Modified event for this scenario.

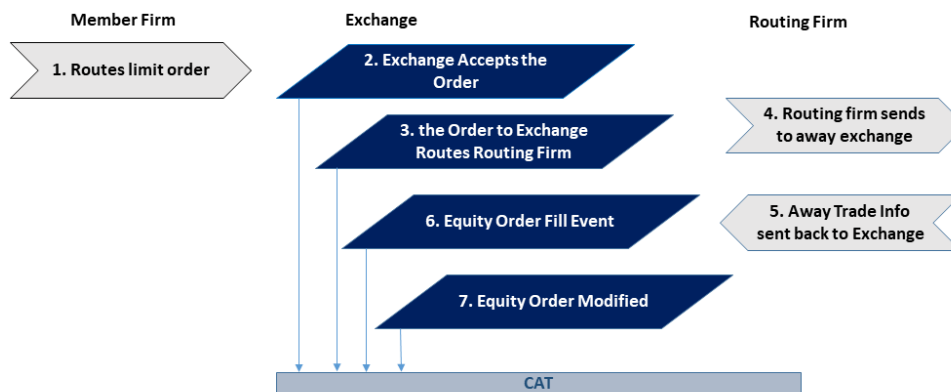


Figure 9: Order Modified Event due to a fill at an away exchange example

Table 72: Order Modified Example 2

#	Step	Reported Event	Comments
1	Member Firm Routes limit order for Execution		A member firm routes an order to Exchange Exch1 over session ID 12 with the order ID of. ZUA7197070219. This order is a limit order for the symbol ABCD, with a quantity of 100
2	Exchange accepts the order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170402T093001.123456789 sequenceNumber: 1001 symbol: ABCD orderID: 5882300 routingParty: FRMA routedOrderID: ZUA7197070219 session: 12 side: Buy price: 10.10 quantity: 100 displayQty: 100 displayPrice: 10.10 workingPrice: 10.10 orderType: LMT timeInForce: DAY capacity: Principal nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.10 nboQty: 87 member: Mem01	- The exchange accepts the order and assigns it the internal order ID: 5882300. - This is order is a limit order with a limit price of 10.10
3	Exchange routes order to routing firm to send to an exchange with a better market	Equity Order Routed Event Type: EOR Exchange:Exch1 eventTimestamp: 20170402T093003.123456789 symbol: ABCD orderID : 5882300 routingParty : RouteFirm routedOrderID : 4827821 session: 12	routedOrderID = 4827821 created by exchange to send to routing firm

#	Step	Reported Event	Comments
		side: Buy price: 10.10 quantity: 100 displayQty: 100 orderType: LMT timeInForce: DAY capacity: Principal result: ACK resultTimeStamp: 20170402T093003.123456799 member: Mem01, nbbPrice: 10.00 nboPrice: 10.10	
4	Routing firm sends firm to away exchange		
5	Routing Firm sends partial fill message back to exchange		
6	Trade occurred for 87 of the orders 100 contracts at the away exchange.	Equity Order Fill Event Type: Exch1 exchange: EOF eventTimestamp: 20170402T093005.123456799 fillId: 22 symbol: ABCD quantity: 87 price: 10.10 leavesQty = 13 orderId: 5882300 side: Buy clearingNumber: 355 contraClearingNumber: 888 routingParty: RouteFirm routedOrderId: 4827821 session: 12 capacity: Principal member: Mem01	
7	Exchange updates the order and reports an order modified event to CAT	Order Modified Event: type: EOM exchange: Exch1 eventTimestamp: 20170402T093055.123456789 symbol: ABCD orderId: 5882300	- EOM event to change the original order quantity from 100 to 13. - The routedOrderId fields is populated with the sroutedOrderId sent

#	Step	Reported Event	Comments
		initiator: Firm nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.05 nboQty: 13 Price: 10.10 quantity: 13 displayQty: 13 leavesQty: 13 orderType: LMT timeInForce: DAY capacity: Principal member: Mem01 routedOrderId: 4827821	to the routing firm in the EOR event.

7.6.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093001.123456789",
  "sequenceNumber": 1001,
  "symbol": "ABCD",
  "orderId": "5882300",
  "routingParty": "FRMA",
  "routedOrderId": " ZUA7197070219",
  "session": "12",
  "side": "Buy",
  "price": 10.10,
  "quantity": 100,
  "displayQty": 100,
  "displayPrice": 10.10,
  "workingPrice": 10.10,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "nbbPrice": 10.00,
  "nbbQty": 100,
  "nboPrice": 10.10,
  "nboQty": 87,
  "member": "Mem01"
}
```

Order Route Event

```
{
  "type": "EOR",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093003.123456789",
  "symbol": "ABCD",
}
```

```

"orderId": "5882300",
"routingParty": "RouteFirm",
"routedOrderID": "4827821",
"session": "12",
"side": "Buy",
"price": 10.10,
"quantity": 100,
"displayQty": 100,
"orderType": "LMT",
"timeInForce": "DAY",
"capacity": "Principal",
"result": "ACK",
"resultTimestamp": "20170402T093003.123456799",
"nbbPrice": 10.00,
"nboPrice": 10.10,
"member": "Mem01"
}

```

Order Fill Event

```

{
  "type": "EOF",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093005.123456799 ",
  "fillID": "22",
  "symbol": "ABCD",
  "price": 10.10,
  "side": "Buy",
  "quantity": 87,
  "leavesQty": 13,
  "orderId": 5882300,
  "clearingNumber": "355",
  "contraClearingNumber": "888",
  "routingParty": "RouteFirm",
  "routedOrderID": "4827821",
  "session": "12",
  "capacity": "Principal",
  "member": "Mem01"
}

```

Order Modified Event

```

{
  "type": "EOM",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093055.123456789",
  "symbol": "ABCD",
  "orderId": "5882300",
  "initiator": "Firm",
  "quantity": 13,
  "displayQty": 13,
  "leavesQty": 13,
  "orderType": "LMT",

```

```

"timeInForce": "DAY",
"capacity": "Principal",
"nbbPrice": 10.00,
"nbbQty": 100,
"nboPrice": 10.05,
"nboQty": 100,
"member": "Mem01",
"routedOrderId": "4827821"
}

```

7.7. Order Adjusted Example

This section will show how an order adjusted event is reported when a change in the NBBO causes the working price of an order to change. This series of events will follow the route of a peg order followed by an adjustment of the working price.

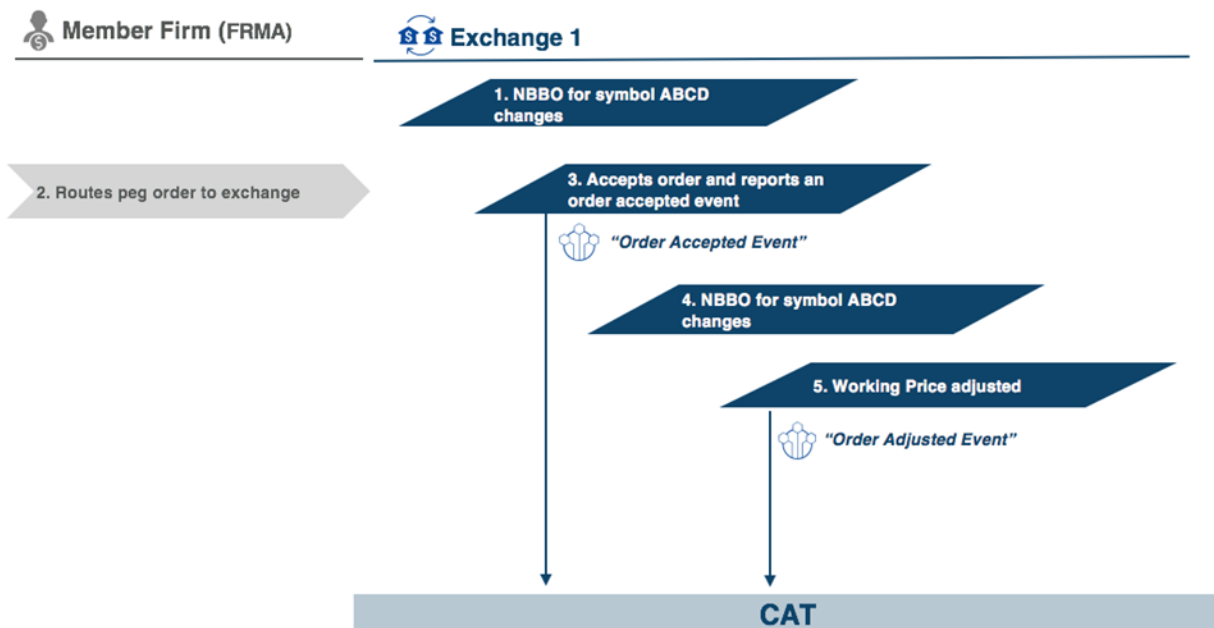


Figure 10: Order Adjusted Example

Table 73: Order Adjusted Example

#	Step	Reported Event	Comments
1	NBBO for symbol ABCD changes		NBBO for symbol is updated to

#	Step	Reported Event	Comments
			10.00X10.05
2	Member Firm Routes order for Execution		A member firm routes an order to Exchange Exch1 over session ID 12 with the order ID of 1112. This order is a mid-peg order for the symbol ABCD, with a quantity of 100
3	Exchange accepts the order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170402T093001.123456789 sequenceNumber: 10001 symbol: ABCD orderID: 98222 routingParty: FRMA routedOrderID: 1112 session: 12 side: Buy price: 10:03 quantity: 100 displayQty: 0 workingPrice: 10.025 orderType: PEG timeInForce: DAY capacity: Principal handlingInstructions: AON nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01	- The exchange accepts the buy order and assigns it the internal order ID: 98222. - This is order is a mid peg order with a limit price of 10.03 - If there were no limit price, then the price field would not be included in JSON or blank in CSV
4	NBBO for symbol ABCD changes		The NBBO for symbol ABCD changes from 10.00X10.05 to 10.01X10.05
5	Exchange updates the handling instructions for the peg order	Order Adjusted Event: type: EOJ exchange: Exch1 eventTimestamp: 20170402T093015.123456789 sequenceNumber: 10091 symbol: ABCD orderID: 98222 initiator: Exchange	- Because the NBBO has changed, the working price will be updated. - The orderID does not change, so originalOrderID does not need to be included.

#	Step	Reported Event	Comments
		price: 10.03 workingPrice: 10.03 nbbPrice: 10.01 nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01 handlingInstructions: FOK	Note, routedOrderId does not need to be reported since this is an exchange initiated event (initiator = "Exchange").

7.7.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093001.123456789",
  "sequenceNumber": 10001,
  "symbol": "ABCD",
  "orderID": "98222",
  "routingParty": "FRMA",
  "routedOrderID": "1112",
  "session": "12",
  "side": "Buy",
  "price": 10.03,
  "quantity": 100,
  "displayQty": 0,
  "workingPrice": 10.025,
  "orderType": "PEG",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "handlingInstructions": "AON",
  "nbbPrice": 10.00,
  "nbbQty": 100,
  "nboPrice": 10.05,
  "nboQty": 100,
  "member": "Mem01"
}
```

Order Adjusted Event

```
{
  "type": "EOJ",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093015.123456789",
  "sequenceNumber": "10091",
  "symbol": "ABCD",
  "orderID": "98222",
  "initiator": "Exchange",
  "price": 10.03,

```

```

"workingPrice": 10.03,
"nbbPrice": 10.01,
"nbbQty": 100,
"nboPrice": 10.05,
"nboQty": 100,
"member": "Mem01"
"handlingInstructions": "FOK"
}

```

7.8. Order Adjusted Example Firm Initiated

The following example illustrates how the routedOrderID should be populated in an order adjusted event if a firm routes in a change to the order to the exchange.

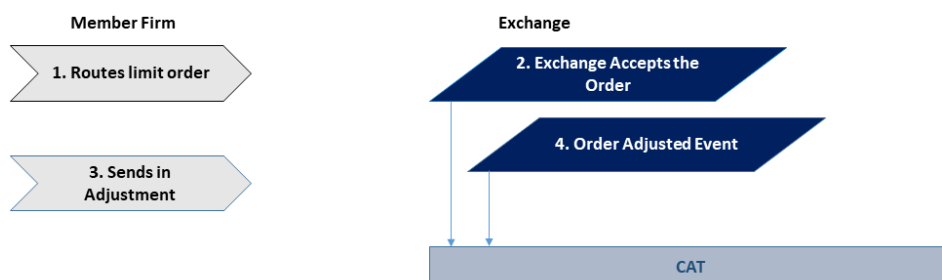


Figure 11: Order Adjusted due to a firm message example

#	Step	Reported Event	Comments
1	Firm routes buy limit peg order to exchange. Exchange Order Accepted Event created		
2	Exchange creates Equity Order Accepted Event	type: EOA exchange: Exch1 eventTimestamp: 20170402T093001.123456789	

#	Step	Reported Event	Comments
		sequenceNumber: 12 symbol: TSLA orderID: 3127867394 routingParty: RFIRMA routedOrderID: 3543550 session: 12 side: Buy price: 10:03 quantity: 100 displayQty: 0 workingPrice: 10.025 orderType: PEG timeInForce: DAY capactiy: Principal handlingInstructions: AON nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01	
3	Firm sends in change to order to modify the quantity from 100 to 50..		
4	Firm adjusts quantity on peg order. Order Adjusted event sent to CAT with routedOrderID sent in from firm.	Order Adjusted Event: type: EOJ exchange: Exch1 eventTimestamp: 20170402T093005.123456789 sequenceNumber: 44 symbol: TSLA orderID: 3127867394 initiator: Firm quantity: 50 workingPrice: 10.025 nbbPrice: 10.01 nbbQty: 100 nboPrice: 10.05 nboQty: 100 member: Mem01 routedOrderID: 3543551	Example of customer initiated order adjustment event with required routedOrderID

7.8.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
```

```

"exchange": "Exch1",
"eventTimestamp": "20170402T093001.123456789",
"sequenceNumber": 12,
"symbol": "TSLA",
"orderID": "3127867394",
"routingParty": "RFIRMA",
"routedOrderID": "3543550",
"session": "12",
"side": "Buy",
"price": 10.03,
"quantity": 100,
"displayQty": 0,
"workingPrice": 10.025,
"orderType": "PEG",
"timeInForce": "DAY",
"capacity": "Principal",
"handlingInstructions": "AON",
"nbbPrice": 10.00,
"nbbQty": 100,
"nboPrice": 10.05,
"nboQty": 100,
"member": "Mem01"
}

```

Order Adjusted Event

```

{
  "type": "EOJ",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093005.123456789",
  "sequenceNumber": "44",
  "symbol": "TSLA",
  "orderID": "3127867394",
  "initiator": "Firm",
  "quantity": 50
  "workingPrice": 10.025,
  "nbbPrice": 10.01,
  "nbbQty": 100,
  "nboPrice": 10.05,
  "nboQty": 100,
  "member": "Mem01",
  "routedOrderId": 3543551
}

```

7.9. Order Adjusted Event because of Partial Execution at Away Exchange

This example shows the scenario where an order is partially filled at an away exchange instigating an option order adjusted event to change the quantity. The option order adjusted event has the routedOrderId populated with the value sent to the routing firm.

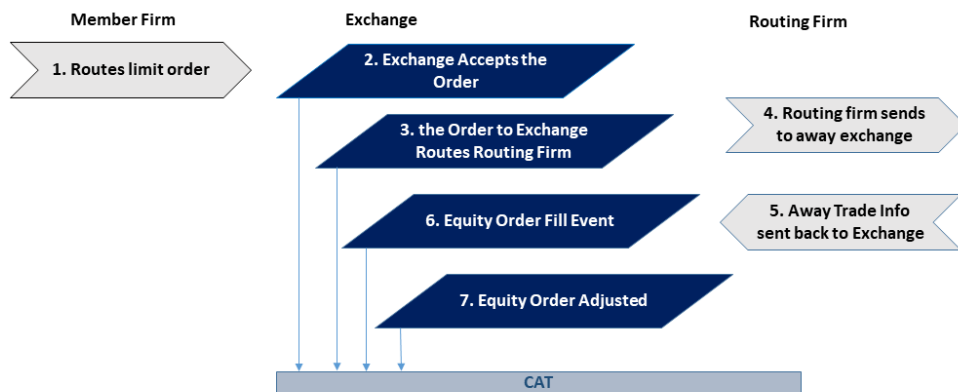


Figure 12: Order Adjusted due to a fill at and away exchange example

#	Step	Reported Event
1	Member Firm Routes limit order for Execution	
2	Exchange accepts the order and reports an order accepted event to CAT	Order Accepted Event: type: EOA exchange: Exch1 eventTimestamp: 20170402T093001.123456789 sequenceNumber: 1001 symbol: ABCD orderID: 5882300 routingParty: FRMA routedOrderID: ZUA7197070219 session: 12 side: Buy price: 10.10 quantity: 100 displayQty: 100 displayPrice: 10.10 workingPrice: 10.10 orderType: LMT timeInForce: DAY capacity: Principal nbbPrice: 10.00

#	Step	Reported Event
		nbbQty: 100 nboPrice: 10.10 nboQty: 87 member: Mem01
3	Exchange routes order to routing firm to send to an exchange with a better market	Equity Order Routed Event Type: EOR Exchange:Exch1 eventTimestamp: 20170402T093003.123456789 symbol: ABCD orderID : 5882300 routingParty : RouteFirm routedOrderId : 4827821 session: 12 side: Buy price: 10.10 quantity: 100 displayQty: 100 orderType: LMT timeInForce: DAY capacity: Principal result: ACK resultTimeStamp: 20170402T093003.123456799 member: MEM, nbbPrice: 10.00 nboPrice: 10.10
4	Routing Firm sends order to away exchange.	
5	Routing Firm returns executed liquidity to the exchange.	
6	Trade occurred for 87 of the orders 100 contracts at the away exchange.	Equity Order Fill Event Type: Exch1 exchange: EOF eventTimestamp: 20170402T093005.123456799 fillId: 22 symbol: ABCD quantity: 87 price: 10.10 leavesQty = 13 orderId: 5882300 side: Buy clearingNumber: 355

#	Step	Reported Event
		contraClearingNumber: 888 routingParty: RouteFirm routedOrderId: 4827821 session: 12 capacity: Principal member: Mem01
7	An order adjust event is sent to CAT to represent the change in quantity.	Order Adjusted Event: type: EOJ exchange: Exch1 eventTimestamp: 20170402T093055.123456789 symbol: ABCD orderID: 5882300 initiator: Firm nbbPrice: 10.00 nbbQty: 100 nboPrice: 10.05 nboQty: 13 quantity: 13 capacity: Principal member: Mem01 routedOrderId: 4827821

7.9.1. JSON Examples

Order Accepted Event

```
{
  "type": "EOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093001.123456789",
  "sequenceNumber": 1001,
  "symbol": "ABCD",
  "orderID": "5882300",
  "routingParty": "FRMA",
  "routedOrderID": " ZUA7197070219",
  "session": "12",
  "side": "Buy",
  "price": 10.10,
  "quantity": 100,
  "displayQty": 100,
  "displayPrice": 10.10,
  "workingPrice": 10.10,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "nbbPrice": 10.00,
  "nbbQty": 100,
  "nboPrice": 10.10,
  "nboQty": 87,
  "member": "Mem01"
}
```

Order Route Event

```
{
  "type": "EOR",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093003.123456789",
  "symbol": "ABCD",
  "orderID": "5882300",
  "routingParty": "RouteFirm",
  "routedOrderID": "4827821",
  "session": "12",
  "side": "Buy",
  "price": 10.10,
  "quantity": 100,
  "displayQty": 100,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "capacity": "Principal",
  "result": "ACK",
  "resultTimestamp": "20170402T093003.123456799",
  "nbbPrice": 10.00,
  "nboPrice": 10.10,
  "member": "Mem01"
}
```

Order Fill Event

```
{
  "type": "EOF",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093005.123456799 ",
  "fillID": "22",
  "symbol": "ABCD",
  "price": 10.10,
  "side": "Buy",
  "quantity": 87,
  "leavesQty": 13,
  "orderID": 5882300,
  "clearingNumber": "355",
  "contraClearingNumber": "888",
  "routingParty": "RouteFirm",
  "routedOrderID": "4827821",
  "session": "12",
  "capacity": "Principal",
  "member": "Mem01"
}
```

Order Adjusted Event

```
{
  "type": "EOJ",
  "exchange": "Exch1",
  "eventTimestamp": "20170402T093055.123456789",

```

```
"symbol": "ABCD",  
"orderId": "5882300",  
"initiator": "Firm",  
"quantity": 13,  
"capacity": "Principal",  
"nbbPrice": 10.00,  
"nbbQty": 100,  
"nboPrice": 10.05,  
"nboQty": 100,  
"member": "Mem01",  
"routedOrderId": "4827821"  
}
```

8. Options Exchange Event Examples

8.1. Quote and Quote Cancel Events

Some exchanges use the term "order" to cover both quotes and non-quote orders. For the purpose of reporting to CAT, a quote is to be interpreted as an order/quote that qualifies as a market maker quote for the purposes of satisfying Section 6.4(d)(iii) of the CAT NMS Plan. That is the section which grants relief to market makers from reporting their quotes to CAT, leaving the exchanges themselves with the sole responsibility of reporting quotes to CAT. If such order/quotes received by the exchange would provide the market maker an exemption from reporting the quote, then the order/quote must be reported to CAT as a quote, not an order.

CAT accepts both one-sided and two-sided quotes.

8.1.1. Two-Sided Quotes Example

The following section will provide examples of reportable events for a two-sided market maker quote when it is posted as a new quote, updated by the market maker, then canceled by the market maker or the exchange. Both the new quote and the updated quote are expressed by the Quote Event, while the quote cancel is expressed by the Quote Cancel Event.

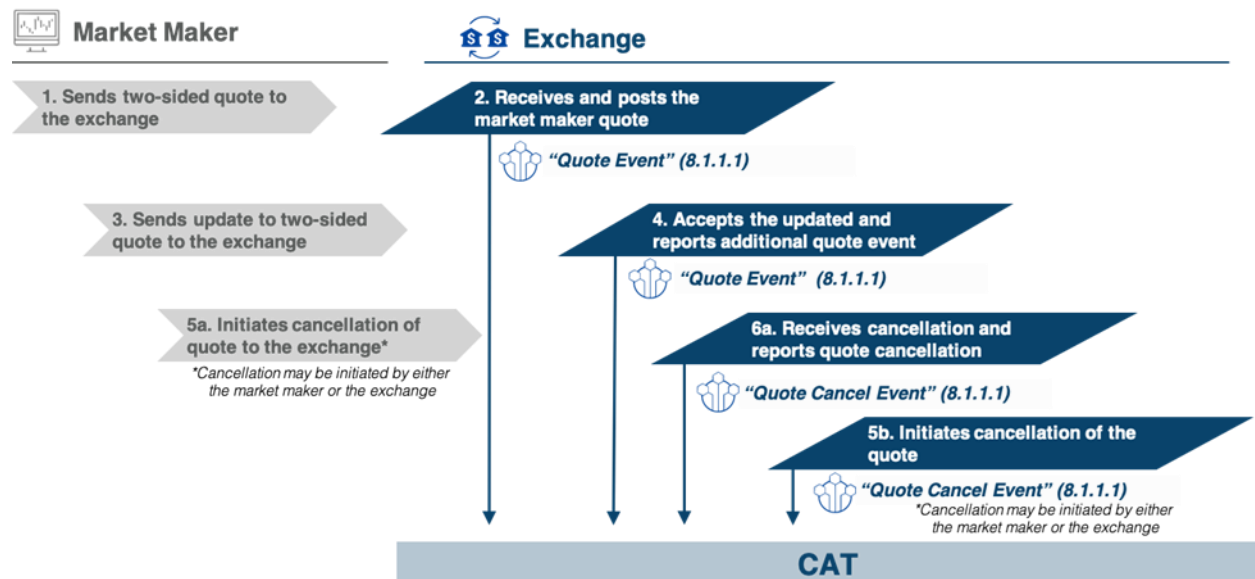


Figure 13: Two-Sided Quote Example

Table 74: Two-Sided Quote Example

#	Step	Reported Event	Comments
1	Market maker sends two-sided quote to the exchange	NA	Market Maker sends updated two sided (buy/sell) quotes, updates them and cancels them
2.	Exchange 1 posts the market maker quote	Quote Event type: OQ exchange: Exch1 eventTimestamp: 20170113T132436.124039 sequenceNumber:1245 marketMaker: ABCD:A16 sentTimestamp: 20170113T132436.123456 optionID: 6779 quoteID: Q9876 onlyOneQuote: true, bidPrice: 2.40 bidQty: 10 askPrice: 2.43 askQty: 10	- The quote is a two-sided quote for an option with the ID: 6779 - The field market maker is the Member Alias assigned by the SRO to identify the market maker issuing the quote. In this case, the market maker ABCD has multiple users (e.g., acronyms used to differentiate users within the same MM), so the characters A16 denote the user or sub-account. - The sent timestamp denotes when the market maker sent the quote to the marketplace, while the event timestamp is when the exchange received the quote
3	Market maker sends an update to the two sided quote to the exchange		The market maker sends an update raising the bid price of the original quote to 2.41
4	Exchange accepts the update and reports a quote event	Quote Event type: OQ exchange: Exch1 eventTimestamp: 20170113T132536.123486789 sequenceNumber: 1278 marketMaker: ABCD:A16 sentTimestamp: 20170113T132536.123456 optionID: 6779 quoteID: Q9941, onlyOneQuote: true,	- The quote event reported by the exchange effectively replaces the former quote, assigning a new quote ID - Note that the quote ID is new: Q9941. Because the MM has only one quote in this optionID, the originalQuoteID is not required.

#	Step	Reported Event	Comments
		bidPrice: 2.41 bidQty: 10 askPrice: 2.43 askQty: 10	Bid Price is updated, however Bid Quantity, Ask Price, , and Ask Quantity remain unchanged
5a	Market maker initiates cancellation of the quote		Market maker sends a cancellation notice of its quote to the exchange
5b	Exchange receives the cancellation and reports an order cancellation event	Quote Cancel Event type: OQC exchange: Exch1 eventTimestamp: 20170113T133036.123486789 sequenceNumber: 1299 marketMaker: ABCD:A16 sentTimestamp: 20170113T133036.123456 optionID: 6779 quoteID: Q9941, onlyOneQuote: true, initiator: MarketMaker cancelReason: ALL	- The value for cancel initiator must always be either market maker or exchange. - The field cancel reason allows for more detail to explain the cancel. In this case ALL represents - Market Maker canceled all quotes. Refer to the data dictionary for more possible values.
6a/b	Exchange initiates cancellation of the quote	Quote Cancel Event type: OQC exchange: Exch1 eventTimestamp: 20170113T133105.123456789 sequenceNumber: 1308 marketMaker: ABCD:A16 quoteID: Q9941, onlyOneQuote: true, initiator: Exchange cancelReason: DIS	- This step represents an example where the exchange cancels the quote. - There is no Sent Timestamp value because the event was initiated by the exchange, not the market maker. - The field cancel reason allows for more detail to explain the cancel, possible values may be specified by the exchange. In this case DIS represents that the quote was canceled due to a lost connection. Refer to the data dictionary for more possible values

8.1.1.1. JSON Examples

Quote Event (Step 2)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T132436.124039",
  "sequenceNumber": 1245,
  "marketMaker": "ABCD:A16",
  "sentTimestamp": "20170113T132436.123456",
  "optionID": "6779",
  "quoteID": "Q9876",
  "onlyOneQuote": true,
  "bidPrice": 2.40,
  "bidQty": 10,
  "askPrice": 2.43,
  "askQty": 10
}
```

Quote Event (Step 4)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T132536.123486789",
  "sequenceNumber": 1278,
  "marketMaker": "ABCD:A16",
  "sentTimestamp": "20170113T132536.123456",
  "optionID": "6779",
  "quoteID": "Q9941",
  "onlyOneQuote": true,
  "bidPrice": 2.41,
  "bidQty": 10,
  "askPrice": 2.43,
  "askQty": 10,
}
```

Quote Cancel Event (Step 6a)

```
{
  "type": "OQC",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T133036.123486789",
  "sequenceNumber": 1299,
  "marketMaker": "ABCD:A16",
  "sentTimestamp": "20170113T133036.123456",
  "optionID": "6779",
  "quoteID": "Q9941",
  "onlyOneQuote": true,
  "initiator": "MarketMaker",
  "cancelReason": "A"
}
```

Quote Cancel Event (Step 5b)

```
{
  "type": "OQC",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T133105.123456789",
  "sequenceNumber": 1308,
  "marketMaker": "ABCD:A16",
  "quoteID": "Q9941",
  "onlyOneQuote": true,
  "initiator": "Exchange",
  "cancelReason": "DIS"
}
```

8.1.2. One-Sided Quotes Example

The following section will provide examples of reported events for a one-sided market maker quote when it is posted as a new quote, updated by the market maker, then canceled by the market maker or the exchange. Both the new quote and the update are expressed by the Quote Event, while the quote cancel is expressed by the Quote Cancel Event.

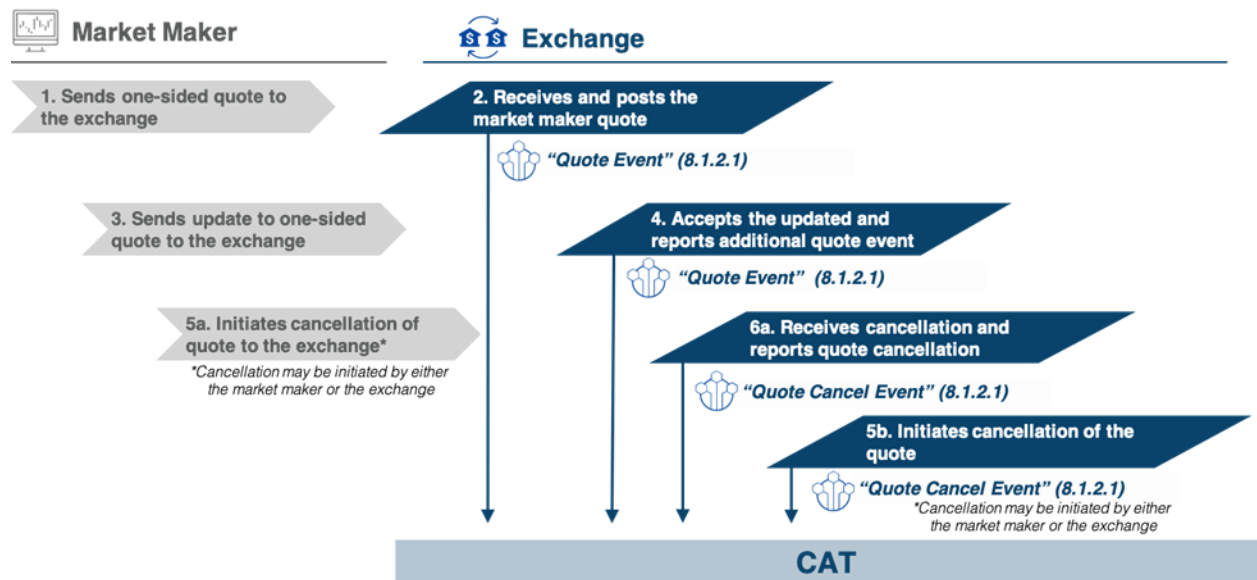


Figure 14: One-Sided Quotes Example

Table 75: One-Sided Quotes Example

#	Step	Reported Event	Comments
1	Market maker sends one-	NA	Market Maker sends

#	Step	Reported Event	Comments
	sided quote to the exchange		one-sided quotes, updates them and cancels them in that sequence
2	Exchange 1 posts the market maker quote	Quote Event Type: OQ Exchange ID: Exch1 eventTimestamp: 20170113T142036.123486789 sequenceNumber: 1010 marketMaker: EFGH:A1 sentTimestamp: 20170113T142036.123456 optionID: 1208 quoteID: Q123456 onlyOneQuote: false bidPrice: 6.10 bidQty: 20	- The quote is a one-sided quote for an option with the ID: 1208 - The field market maker is the Member Alias assigned by the SRO to identify the market maker issuing the quote. In this case, the market maker EFGH has multiple users (e.g., acronyms used to differentiate users within the same MM), so the characters A1 denote the user or sub-account. - The sent timestamp denotes when the market maker sent the quote to the marketplace, while the event timestamp is when the exchange received the quote - The option ID is the ID of the option as assigned by the exchange
3	Market maker sends an update to the one sided quote to the exchange		The market maker sends an update raising the quantity of the original quote to 30
4	Exchange accepts the update and reports a quote event	Quote Event Type: OQ Exchange ID: Exch1 eventTimestamp: 20170113T142536.123486789 sequenceNumber: 1038 marketMaker: EFGH:A1 sentTimestamp: 20170113T142536.123456 optionID: 1208 quoteID: Q22222 originalQuoteID: Q123456	- The quote event reported by the exchange effectively replaces the former quote, assigning a new quote ID - Note that the quote ID is new: Q22222, while the former quote ID is included in the field Original Quote ID. - Bid Quantity is

#	Step	Reported Event	Comments
		onlyOneQuote: false bidPrice: 6.10 bidQty: 30	updated, however Bid price is unchanged
5a	Market maker initiates cancellation of the quote		Market maker sends a cancellation notice of its quote to the exchange
5b	Exchange receives the cancellation and reports an order cancellation event	Quote Cancel Event type: OQC exchange: Exch1 sentTimestamp: 20170113T143036.123456 eventTimestamp: 20170113T143036.123486789 sequenceNumber: 1142 marketMaker: EFGH:A1 optionID: 1208 quoteID: Q22222 onlyOneQuote: false initiator: MarketMaker cancelReason: ALL	- The value for cancel initiator must always be either market maker or exchange. - The field cancel reason allows for more detail to explain the cancel. In this case ALL represents - Market Maker canceled all quotes. Refer to the data dictionary for more possible values.
6a/b	Exchange initiates cancellation of the quote	Quote Cancel Event type: OQC exchange: Exch1 eventTimestamp: 20170113T143105.123456789 sequenceNumber: 1142 marketMaker: EFGH:A1 optionID: 1208 quoteID: Q22222 onlyOneQuote: false initiator: Exchange cancelReason: DIS	- This step displays an example where the quote is canceled by the exchange - There is no Sent Timestamp value because the event was initiated by the exchange, not the market maker. - The field cancel reason allows for more detail to explain the cancel, possible values may be specified by the exchange. In this case DIS represents that the quote was canceled due to a lost connection. Refer to the data dictionary for more possible values

8.1.2.1. JSON Examples

Quote Event (Step 2)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T142036.123486789",
  "sequenceNumber": 1010,
  "marketMaker": "EFGH:A1",
  "sentTimestamp": "20170113T142036.123456",
  "optionID": "1208",
  "quoteID": "Q123456",
  "onlyOneQuote": false,
  "bidPrice": 6.10,
  "bidQty": 20
}
```

Quote Event (Step 4)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T142536.123486789",
  "sequenceNumber": 1038,
  "marketMaker": "EFGH:A1",
  "sentTimestamp": "20170113T142536.123456",
  "optionID": "1208",
  "quoteID": "Q22222",
  "originalQuoteID": "Q123456",
  "onlyOneQuote": false,
  "bidPrice": 6.10,
  "bidQty": 30
}
```

Quote Cancel Event (Step 6a)

```
{
  "type": "OQC",
  "exchange": "Exch1",
  "sentTimestamp": "20170113T143036.123456",
  "eventTimestamp": "20170113T143036.123486789",
  "sequenceNumber": 1142,
  "marketMaker": "EFGH:A1",
  "optionID": "1208",
  "quoteID": "Q22222",
  "onlyOneQuote": false,
  "initiator": "MarketMaker",
  "cancelReason": "ALL"
}
```

Quote Cancel Event (Step 5b)

```
{
```

```

    "type": "OQC",
    "exchange": "Exch1",
    "eventTimestamp": "20170113T143105.123456789",
    "sequenceNumber": 1142,
    "marketMaker": "EFGH:A1",
    "optionID": "1208",
    "quoteID": "Q22222",
    "onlyOneQuote": false,
    "initiator": "Exchange",
    "cancelReason": "DIS"
  }

```

8.2. Option Order Event Examples

8.2.1. Simple Option Order Accepted Example

This example describes a Simple Option Order Accepted Event in which the exchange receives and accepts an order for a simple option. Note that in this example Complex Order ID is not provided because there is no parent complex order.

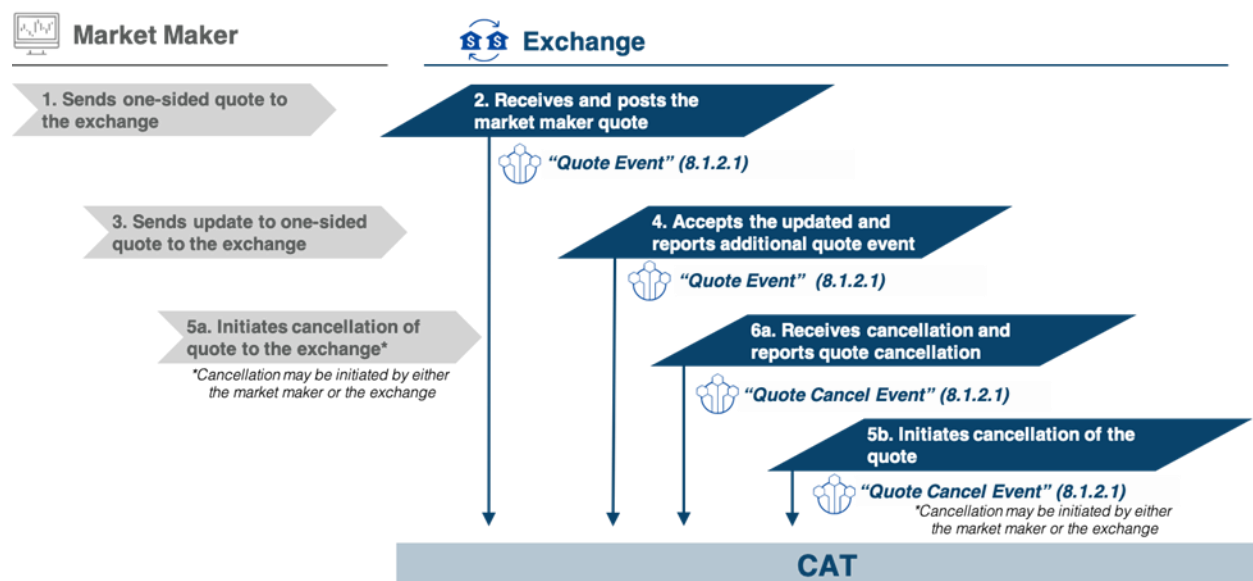


Figure 15: Simple Option Order Accepted Example

Table 76: Simple Option Order Accepted Example

#	Step	Reported Event	Comments
1	Member firm sends option order to the exchange	NA	The order is routed over session ID 3, with a price of 18.59,

#	Step	Reported Event	Comments
			quantity of 10, for the option defined by the exchange as Option ID 1208
2.	Exchange 1 accepts the order and reports a Simple Option Order Accepted Event	Simple Option Order Accepted Event: type: OOA exchange: Exch1 eventTimestamp: 20170116T143105.123456789 sequenceNumber: 909 optionID: 1208 orderID: 123456 routingParty: FRMA routedOrderID: 98765 session: 3 side: Buy price: 18.59 quantity: 10 displayQty: 10 displayPrice: 18.59 workingPrice: 18.59 openCloseIndicator: Open orderType: LMT timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 nbbPrice: 18.58 nbbQty: 10 nboPrice: 18.60 nboQty: 10 member: Mem01	- The option ID is the ID of the option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm. - The origin code value of C represents that the order originated from a customer

8.2.1.1. JSON Example

Simple Option Order Accepted Event

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143105.123456789",
  "sequenceNumber": 909,
  "optionID": "1208",
  "orderID": "123456",
  "routingParty": "FRMA",
  "routedOrderID": "98765",
  "session": "3",
  "side": "Buy",
  "price": 18.59,
```

```

"quantity": 10,
"displayQty": 10,
"displayPrice": 18.59,
"workingPrice": 18.59,
"openCloseIndicator": "Open",
"orderType": "LMT",
"timeInForce": "DAY",
"exchOriginCode": "C",
"coverage": "Uncovered",
"executingFirm": "999",
"nbbPrice": 18.58,
"nbbQty": 10,
"nboPrice": 18.60,
"nboQty": 10,
"member": "Mem01"
}

```

8.2.2. Complex Option Order Accepted Event Example

In the example below, the exchange only creates leg orders at the time an order is executed. Thus, an order on the complex option would have a report sent to CAT for an order accepted event at the parent level of the complex order. Any leg reports would wait until the leg orders are actually created when a trade occurs.

The examples in this section will use an order on the complex option with optionID 9843. This hypothetical complex option has two option series legs:

Complex Option – optionID: 9843

Table 77: Complex Option Order Example: Legs

optionID	side	ratio	primaryDeliverable	expirationDate	strikePrice	putCall	exerciseStyle	settlement
1491	Buy	1	XYZZY	21 Oct 2017	30.00	C	American	PM
1492	Sell	1	XYZZY	21 Oct 2017	32.50	C	American	PM

For this example, we suppose at 192411.121456789 on April 20, 2017 an order was accepted for 10 units of complex option 9843 at net price -65 per unit.

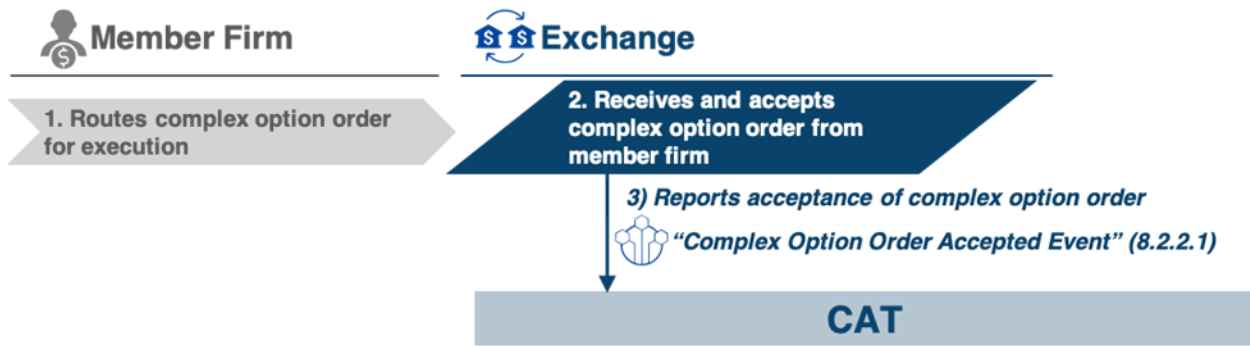


Figure 16: Complex Option Order Example

Table 78: Complex Option Order Example

#	Step	Reported Event	Comments
1	Market maker sends complex option order to the exchange	NA	The order is routed over session ID 7, with a price of -65, quantity of 10, for the option defined by the exchange as Option ID 9843
2	Exchange 1 accepts the complex option order		
3	Exchange 1 reports a complex option order accepted event. Leg events are not reported until an execution happens, so the only event reported at this time is for the complex option order.	Complex Option Order Accepted Event type: OCOA exchange: Exch1 eventTimestamp: 20170420T142411.121456789 sequenceNumber: 909 optionID: 9843 orderID: 8473692 side: AsDirected routingParty: FRMA routedOrderID: 4567123 session: 7 price: -65.00 quantity: 10 timeInForce: DAY member: Mem01	- The option ID is the ID of the option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm.

8.2.2.1. JSON Examples

Complex Order Accepted Event (Step 3)

```
{
  "type": "OCOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "optionID": "9843",
  "orderID": "8473692",
  "side": "AsDirected",
  "routingParty": "FRMA",
  "routedOrderID": "4567123",
  "session": "7",
  "price": -65.00,
  "quantity": 10,
  "timeInForce": "DAY",
  "member": "Mem01"
}
```

8.3. Simple Option Order Modified Event

This example shows how to populate the routedOrderId for a firm initiated modification.

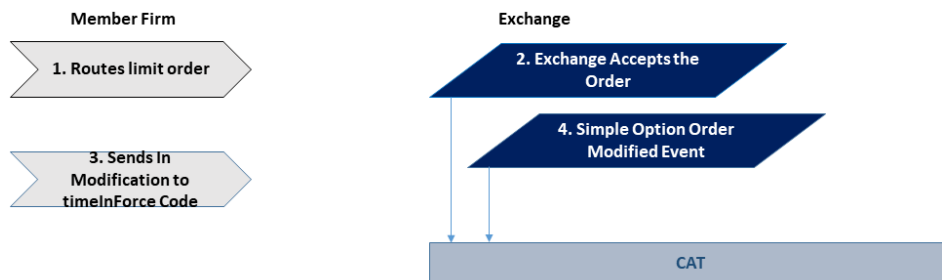


Figure 17: Simple Option Order Modify Event due to a firm change

#	Step	Reported Event	Comments
1	Member firm sends option order to the exchange	NA	The order is routed over session ID 3, with a price of 18.59, quantity of 10, for the option defined by the exchange as Option ID 1208
2.	Exchange 1 accepts the order and reports a Simple Option Order Accepted Event	Simple Option Oder Accepted Event: type: OOA exchange: Exch1 eventTimestamp: 20170116T143105.123456789 sequenceNumber: 909 optionID: 1208 orderID: 123456 routingParty: FRMA routedOrderID: 98765 session: 3 side: Buy price: 18.59 quantity: 10 displayQty: 10 displayPrice: 18.59 workingPrice: 18.59 openCloseIndicator: Open orderType: LMT timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 nbbPrice: 18.58 nbbQty: 10 nboPrice: 18.60 nboQty: 10 member: Mem01	- The option ID is the ID of the option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm. - The origin code value of C represents that the order originated from a customer
3	Member firm sends in a request to change the timeInForce for the order from DAY to GTC		
4	An Option Order Modify Event is sent in to CAT from the exchange.	type: OOM exchange: Exch1 eventTimestamp: 20170116T143110.123456789 sequenceNumber: 912 optionID: 1208 orderID: 3312629458 coverage: Uncovered originalOrderID: 123456 initiator: Firm nbbPrice: 18.58	Note that the inbound routedOrderID (Fix value ClOrdID Tag 11) sent in from the member firm is on the OOM event.

#	Step	Reported Event	Comments
		nbbQty: 10 nboPrice: 18.60 nboQty: 10 price: 18.59 quantity: 10 displayQty: 10 displayPrice: 18.59 workingPrice: 18.59 openCloseIndicator: Open orderType: LMT timeInForce: GTC exchOrigCode: C executingFirm: 999 member: Mem01 routedOrderId: 98766:	

8.3.1. JSON Example

Simple Option Order Accepted Event

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143105.123456789",
  "sequenceNumber": 909,
  "optionID": "1208",
  "orderID": "123456",
  "routingParty": "FRMA",
  "routedOrderID": "98765",
  "session": "3",
  "side": "Buy",
  "price": 18.59,
  "quantity": 10,
  "displayQty": 10,
  "displayPrice": 18.59,
  "workingPrice": 18.59,
  "openCloseIndicator": "Open",
  "orderType": "LMT",
  "timeInForce": "DAY",
  "exchOriginCode": "C",
  "coverage": "Uncovered",
  "executingFirm": "999",
  "nbbPrice": 18.58,
  "nbbQty": 10,
  "nboPrice": 18.60,
  "nboQty": 10,
  "member": "Mem01"
}
```

Simple Option Order Modified Event

```

{
  "type": "OOM",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143110.123456789",
  "sequenceNumber": 912,
  "optionID": "1208",
  "orderID": "3312629458",
  "OriginalOrderId": 123456,
  "price": 18.59,
  "quantity": 10,
  "displayQty": 10,
  "displayPrice": 18.59,
  "workingPrice": 18.59,
  "openCloseIndicator": "Open",
  "orderType": "LMT",
  "timeInForce": "GTC",
  "exchOriginCode": "C",
  "coverage": "Uncovered",
  "executingFirm": "999",
  "nbbPrice": 18.58,
  "nbbQty": 10,
  "nboPrice": 18.60,
  "nboQty": 10,
  "member": "Mem01",
  "routedOrderId": "98766"
}

```

8.4. Simple Option Order Modified Event Created As a Result of Partial Execution at Away Exchange

This example shows how to populate the Simple Option Order Modify Event in the scenario where an order is routed to an away exchange. At the away exchange, the order is partially executed, leaving quantity returned to the exchange for the order. The Option Order Modify event is created showing this change in order quantity.

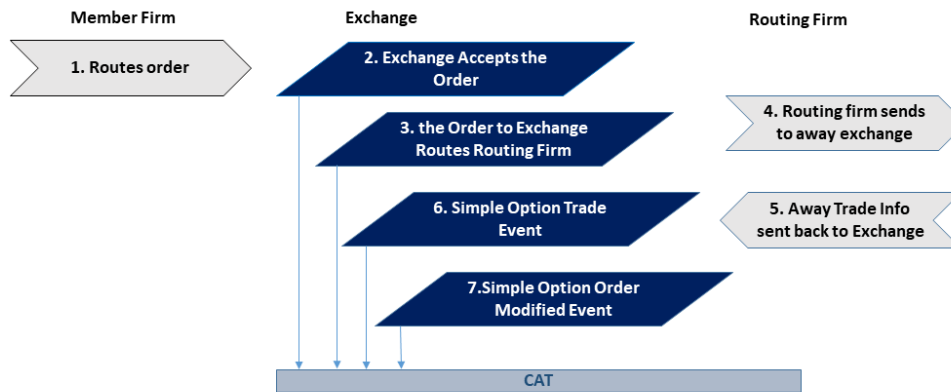


Figure 18: Simple Option Order Modification Event due to execution at away exchange

#	Step	Reported Event	Comments
1	Member firm sends option order to the exchange	NA	The order is routed over session ID 3, with a price of 18.59, quantity of 10, for the option defined by the exchange as Option ID 1208
2.	Exchange 1 accepts the order and reports a Simple Option Order Accepted Event	Simple Option Oder Accepted Event: type: OOA exchange: Exch1 eventTimestamp: 20170116T143105.123456789 sequenceNumber: 909 optionID: 1208 orderID: 123456 routingParty: FRMA routedOrderID: 98765 session: 3 side: Buy price: 18.59 quantity: 10 displayQty: 10	- The option ID is the ID of the option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm. - The origin code value of C represents that the order originated from a customer

#	Step	Reported Event	Comments
		displayPrice: 18.59 workingPrice: 18.59 openCloseIndicator: Open orderType: LMT timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 nbbPrice: 18.56 nbbQty: 10 nboPrice: 18.59 nboQty: 4 member: Mem01	
3	Option order is routed to an exchange with a better Market	OOR event type: OOR exchange: Exch1 eventTimesampe: 20170116T143110.123456789 sequenceNumber: 911 optionID: 1208 orderID: 123456 routingParty: RoutingFirm routedOrderID: 4823326 session: 3 side: Buy price: 18.59 quantity: 10 displayQty: 10 orderType: LMT coverage: Uncovered timeInForce: DAY nbbPrice: 18.56 nbbQty: 10 nboPrice: 18.59 nboQty: 4 member: Mem01	The order is routed to an exchange with a better offer
4	Routing Firm sends the order to the away exchange with a better market.		
5	Routing Firm returns a message with the remaining quantity on the order.		
6	Option order is partially executed at the away exchange, prompting an order trade event with the side routed away populated.	Option Trade Event: type: OT exchange: Exch1 eventTimestamp: 20170116T143111.123456789 sequenceNumber: 915 tradeID: 12345	<u>Quantity of 4 trades at the nbo price of 18.59 at the away exchange</u>

#	Step	Reported Event	Comments
		optionID: 1208 quantity: 4 price: 18.59 nbbPrice: 18.56 nbbQty: 10 nboPrice: 18.59 nboQty: 4 Sell Side Details side: Sell executingFirm: 987 exchOriginCode: F member: BATS Buy Side Details side: Buy leavesQty: 6 openCloseIndicator: Open orderID: 123456 executingFirm: 551 exchOriginCode: C liquidityCode: Removed member: Mem01 routedOrderID: 4823326	
7	Option Order Modified Event created to reflect the reduced quantity from an order executed at an away exchange	type: OOM exchange: Exch1 eventTimestamp: 20170116T143111.123456999 sequenceNumber: 920 optionID: 1208 orderID: 123456 coverage: Uncovered originalOrderID: 123456 initiator: Firm nbbPrice: 18.56 nbbQty: 10 nboPrice: 18.60 nboQty: 10 price: 18.59 quantity: 6 displayQty: 6 displayPrice: 18.59 workingPrice: 18.59 openCloseIndicator: Open orderType: LMT timeInForce: DAY exchOrigCode: C member: Mem01 routedOrderID: 4823326:	Option order modify event created for quantity change from 10 to 6. Note the routedOrderID is the routedOrderID sent from the exchange to the routing firm on the OOR event.

8.4.1. JSON Examples

Simple Option Order Accepted Event

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143105.123456789",
  "sequenceNumber": 909,
  "optionID": "1208",
  "orderID": "123456",
  "routingParty": "FRMA",
  "routedOrderID": "98765",
  "session": "3",
  "side": "Buy",
  "price": 18.59,
  "quantity": 10,
  "displayQty": 10,
  "displayPrice": 18.59,
  "workingPrice": 18.59,
  "openCloseIndicator": "Open",
  "orderType": "LMT",
  "timeInForce": "DAY",
  "exchOriginCode": "C",
  "coverage": "Uncovered",
  "executingFirm": "999",
  "nbbPrice": 18.56,
  "nbbQty": 10,
  "nboPrice": 18.59,
  "nboQty": 4,
  "member": "Mem01"
}
```

Option Order Route Event

```
{
  "type": "OOR",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143110.123456789",
  "sequenceNumber": 911,
  "optionID": "1208",
  "orderID": "123456",
  "routingParty": "RoutingFirm",
  "routedOrderID": "4823326",
  "session": "3",
  "side": "Buy",
  "price": 18.59,
  "quantity": 10,
  "displayQty": 10,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "coverage": "Uncovered",
  "executingFirm": "999",
  "nbbPrice": 18.56,

```

```

    "nbbQty": 10,
    "nboPrice": 18.59,
    "nboQty": 4,
    "member": "Mem01"
}

```

Option Trade Event

```

{
  "type": "OT",
  "exchange": "Exch1",
  "eventTimestamp": "20170116T143111.123456789",
  "sequenceNumber": 915,
  "tradeID": "12345",
  "optionID": "1208",
  "quantity": 4,
  "price": 18.59,
  "nbbPrice": 18.56,
  "nbbQty": 10,
  "nboPrice": 18.59,
  "nboQty": 4,
  "sellDetails": {
    "side": "Sell",
    "leavesQty": 6,
    "executingFirm": "987",
    "exchOriginCode": "F",
    "member": "BATS"
  },
  "buyDetails": {
    "side": "Buy",
    "leavesQty": 6,
    "openCloseIndicator": "Open",
    "orderID": "4823326",
    "executingFirm": "551",
    "exchOriginCode": "C",
    "liquidityCode": "Removed",
    "member": "Mem01"
  }
}

```

8.5. Simple Option Trade Event Examples

The below section will provide an example of a trade event for an option series where a broker order is executed against an existing market maker quote.

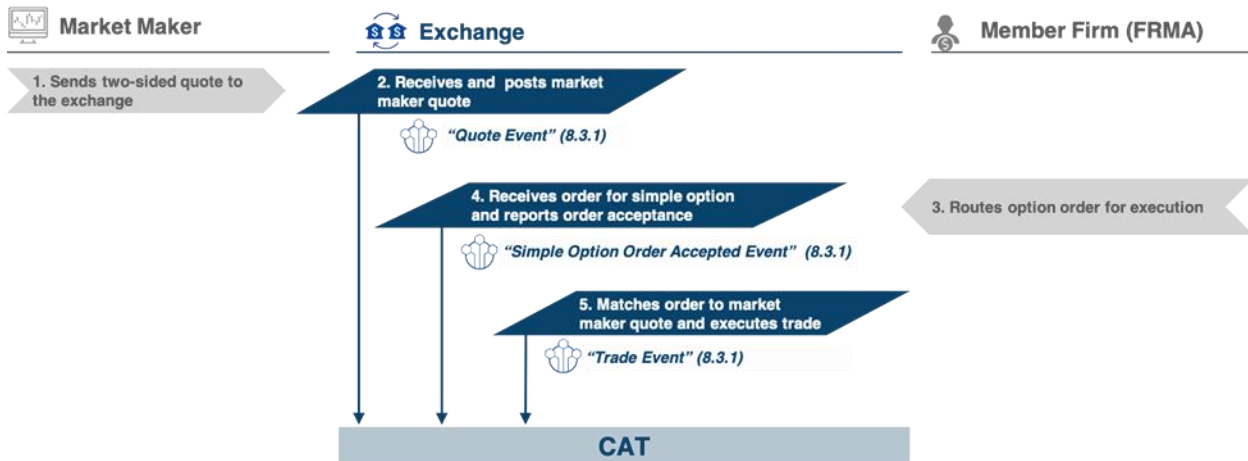


Figure 19: Simple Option Trade Event Example

Table 79: Simple Option Trade Event Example

#	Step	Reported Event	Comments
1	Market maker sends two-sided quote to the exchange	NA	This scenario displays complete lifecycle of a simple options from Quote to Trade
2.	Exchange 1 posts the market maker quote	Quote Event type: OQ exchange: Exch1 sentTimestamp: 20170113T132036.123456 eventTimestamp: 20170113T132036.123486789 sequenceNumber: 1245 marketMaker: ABCD:A16 optionID: 6779 quoteID: Q9876 onlyOneQuote: true bidPrice: 2.40 bidQty: 10 askPrice: 2.43 askQty: 10	- The quote is a two-sided quote for an option with the ID: 6779 - The field market maker is the Member Alias assigned by the SRO to identify the market maker issuing the quote. In this case, the market maker ABCD has multiple users (e.g., acronyms used to differentiate users within the same MM), so the characters A16 denote the user or sub-account. - The sent timestamp denotes when the market maker sent the quote to the marketplace, while the event timestamp

#	Step	Reported Event	Comments
			is when the exchange received the quote
3	Member firm sends option order to the exchange	NA	The order is routed over session ID 7, with a price of 2.43, quantity of 4, for the option defined by the exchange as Option ID 6779
4	Exchange 1 accepts the order and reports a Simple Option Order Accepted Event	Simple Option Order Accepted Event: type: OOA exchange: Exch1 eventTimestamp: 20170113T132209.123486789 sequenceNumber: 1300 optionID: 6779 orderID: 56789 routingParty: FRMA routedOrderID: 98654 session: 7 side: Buy price: 2.43 quantity: 4 displayQty: 4 displayPrice: 2.43 workingPrice: 2.43 openCloseIndicator: Open orderType: LMT timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 nbbPrice: 2.40 nbbQty: 10 nboPrice: 2.43 nboQty: 10 member: Mem01	- The option ID is the ID of the option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm. - The origin code value of C represents that the order originated from a customer
5	Exchange 1 matches order to market maker quote and executes trade	Option Trade Event: type: OT exchange: Exch1 eventTimestamp: 20170113T132211.123456789 sequenceNumber: 1421 tradeID: 12345 optionID: 6779 quantity: 4 price: 2.43 nbbPrice: 2.42 nbbQty: 10	

#	Step	Reported Event	Comments
		nboPrice: 2.43 nboQty: 10 saleCondition: "O " Sell Side Details side: Sell leavesQty: 6 quoteID: Q9876 executingFirm: 987 mktMkrSubAccount: ABC123 exchOriginCode: M liquidityCode: Added member: ABCD:A16 Buy Side Details side: Buy leavesQty: 0 openCloseIndicator: Open orderID: 56789 executingFirm: 999 exchOriginCode: C liquidityCode: Removed member: Mem01	

8.5.1. JSON Examples

Quote Event

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "sentTimestamp": "20170113T132036.123456",
  "eventTimestamp": "20170113T132036.123486789",
  "sequenceNumber": 1245,
  "marketMaker": "ABCD:A16",
  "optionID": "6779",
  "quoteID": "Q9876",
  "onlyOneQuote": true,
  "bidPrice": 2.40,
  "bidQty": 10,
  "askPrice": 2.43,
  "askQty": 10
}
```

Simple Option Order Accepted Event

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T132209.123486789",
}
```

```

"sequenceNumber": 1300,
"optionID": "6779",
"orderID": "56789",
"routingParty": "FRMA",
"routedOrderID": "98654",
"session": "7",
"side": "Buy",
"price": 2.43,
"quantity": 4,
"displayQty": 4,
"displayPrice": 2.43,
"workingPrice": 2.43,
"openCloseIndicator": "Open",
"orderType": "LMT",
"timeInForce": "DAY",
"exchOriginCode": "C",
"coverage": "Uncovered",
"executingFirm": "999",
"nbbPrice": 2.40,
"nbbQty": 10,
"nboPrice": 2.43,
"nboQty": 10,
"member": "Mem01"
}

```

Option Trade Event

```

{
  "type": "OT",
  "exchange": "Exch1",
  "eventTimestamp": "20170113T132211.123456789",
  "sequenceNumber": 1421,
  "tradeID": "12345",
  "optionID": "6779",
  "quantity": 4,
  "price": 2.43,
  "nbbPrice": 2.42,
  "nbbQty": 10,
  "nboPrice": 2.43,
  "nboQty": 10,
  "saleCondition": "O ",
  "sellDetails": {
    "side": "Sell",
    "leavesQty": 6,
    "quoteID": "Q9876",
    "executingFirm": "987",
    "mktMkrSubAccount": "ABC123",
    "exchOriginCode": "M",
    "liquidityCode": "Added",
    "member": "ABCD:A16",
    "executionCodes": {
      "INTLIQ": "A",
      "SUBLIQ": "S"
    }
  }
}

```

```

},
"buyDetails": {
  "side": "Buy",
  "leavesQty": 0,
  "openCloseIndicator": "Open",
  "orderID": "56789",
  "executingFirm": "999",
  "exchOriginCode": "C",
  "liquidityCode": "Removed",
  "member": "Mem01",
  "executionCodes": {
    "INTLIQ": "A",
    "SUBLIQ": "S"
  }
}
}
}

```

Example CSV Corresponding - Options Trade Event:

```

OT,Exch1,20170113T132211.123456789,1421,,12345,6779,4,2.43,2.42,10,2.43,10, O
,,Buy,0,Open,,,56789,999,,,C,Removed,INTLIQ=A|SUBLIQ=S,Mem01,Sell,6,,
Q9876,,987,,,ABC123,M,Added,INTLIQ=A|SUBLIQ=S,ABCD:A16

```

8.6. Complex Options Trade Events Examples

In all cases, complex option trades are reported to CAT only at the leg level. There is no roll-up trade reported at the complex order level. For example, an order on the complex option (ID 9851) below would have had corresponding orders reported to CAT for each of the underlying legs. As the following examples will show, trades on this complex option will report by leg, with each leg trade event corresponding to an order event on the leg that is in turn attached to a parent-level complex order event.

Complex Option – optionID: 9851

Table 80: Complex Options Trade Events Example: Legs

optionID	side	ratio	primaryDeliverable	expirationDate	strikePrice	putCall	exerciseStyle	settlement
1491	Buy	1	XYZZY	21 Oct 2017	30.00	C	American	PM
1492	Sell	1	XYZZY	21 Oct 2017	32.50	C	American	PM
XYZZY	Buy	100						

This section follows a series of trade events on the complex option described above, along with examples of the quotes and orders that would be referenced in those trades.

- A new market maker quote is posted for the option leg 1491
- A new market maker quote is posted for the option leg 1492

- An order is placed for quantity 10 of the complex option 9851
- A trade on the first option leg 1491 is reported (10 contracts)
- A trade on the second option leg 1492 is reported (10 contracts)
- A fill on the stock leg XYZZY is reported (1,000 shares)

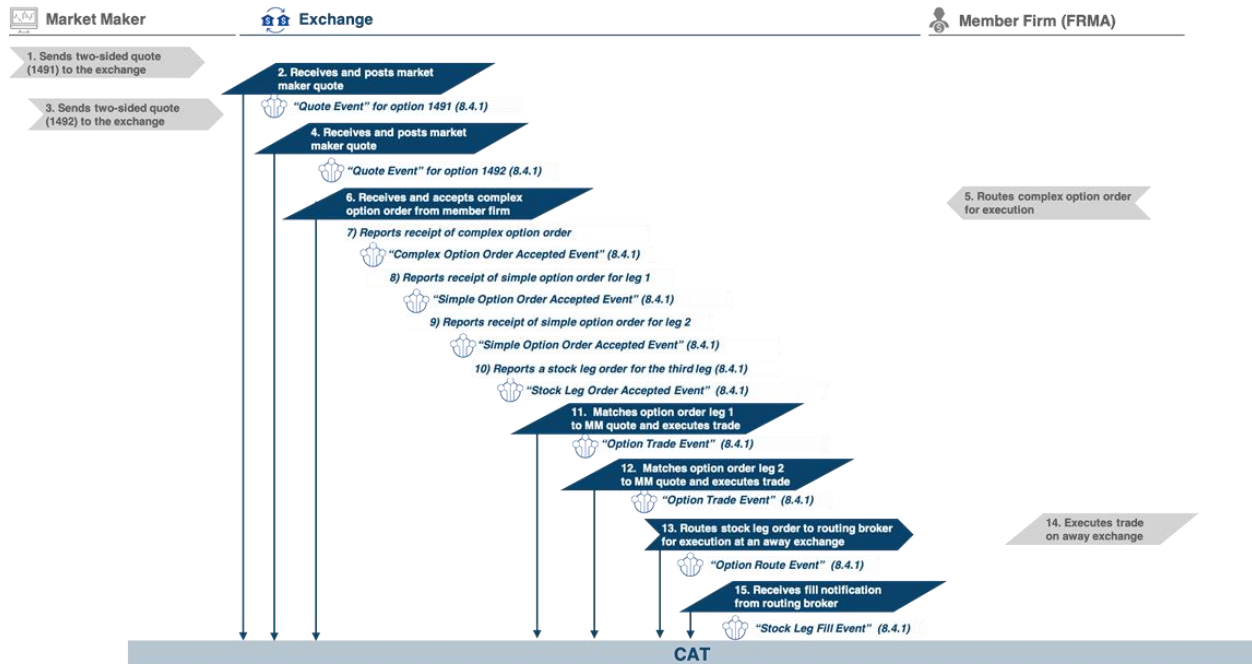


Figure 20: Complex Options Trade Events Example

Table 81: Complex Options Trade Events Example

#	Step	Reported Event	Comments
1	Market maker sends two-sided quote to the exchange	NA	Quote is for the option the exchange identifies as option ID 1491
2.	Exchange 1 posts the market maker quote	Quote Event type: OQ exchange: Exch1 sentTimestamp: 20170420T142036.123456 eventTimestamp: 20170420T142036.123486789 sequenceNumber: 1112 marketMaker: ABCD:AA optionID: 1491	- The quote is a two-sided quote for an option with the option ID: 1491 - The field market maker is the Member Alias assigned by the SRO to identify the market maker issuing the quote. In this case, the market maker ABCD has

#	Step	Reported Event	Comments
		quoteID: 12345 onlyOneQuote: true bidPrice: 1.90 bidQty: 10 askPrice: 2.00 askQty: 10	multiple users (e.g., acronyms used to differentiate users within the same MM), so the characters AA denote the user or sub-account. The sent timestamp denotes when the market maker sent the quote to the marketplace, while the event timestamp is when the exchange received the quote
3	Market maker sends two-sided quote to the exchange	NA	Quote is for the option the exchange identifies as option ID 1492
4	Exchange 1 posts the market maker quote	Quote Event type: OQ exchange: Exch1 sentTimestamp: 20170420T142036.124456 eventTimestamp: 20170420T142036.124486789 sequenceNumber: 1125 marketMaker: ABCD:AA mktMkrSubAccount: A16 optionID: 1492 quoteID: 67890 onlyOneQuote: true bidPrice: 1.00 bidQty: 10 askPrice: 1.10 askQty: 10	- The quote is a two-sided quote for an option with the ID: 1492 - The field market maker is the Member Alias assigned by the SRO to identify the market maker issuing the quote. In this case, the market maker ABCD has multiple users (e.g., acronyms used to differentiate users within the same MM), so the characters A16 denote the user or sub-account. - The sent timestamp denotes when the market maker sent the quote to the marketplace, while the event timestamp is when the exchange received the quote
5	Member Firm (FRMA) sends complex option order to the exchange	NA	The order is routed over session ID 7, with a price of - 30.90, quantity of 10, for the option defined by the exchange as Option ID 9851

#	Step	Reported Event	Comments
6	Exchange 1 accepts the complex option order	<i>Shown in steps 7, 8, and 9</i>	
7	Exchange 1 reports a complex option order accepted event	Complex Option Order Accepted Event type: OCOA exchange: Exch1 eventTimestamp: 20170420T142411.121456789 sequenceNumber: 909 optionID: 9851 orderID: 8473692 side: AsDirected routingParty: FRMA routedOrderID: 4567123 session: 7 price: -30.90 quantity: 10 timeInForce: DAY member: Mem01	- The option ID is the ID of the complex option as assigned by the exchange. - The Order ID is the ID of the order as assigned by the exchange, while the routed order ID is the order ID as defined by the member firm.
8	Exchange 1 reports a simple option order accepted event for the first leg	Simple Option Order Accepted Event type: OOA exchange: Exch1 eventTimestamp: 20170420T142411.121456790 sequenceNumber: 909 optionID: 1491 orderID: 84736921 side: Buy quantity: 10 displayQty: 0 openClose: Open orderType: LEG timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 complexOrderID: 8473692 complexOptionID: 9851 nbbPrice: 1.90 nbbQty: 10 nboPrice: 2.00 nboQty: 10 member: Mem01	- This section describes the Simple Option Order Accepted Event for Leg 1 corresponding to the complex option order described above. - Note that in this Simple Option Order Accepted Event for Leg 1, the Routed Order ID is the same as reported in the parent complex order, however, the order ID for this leg is unique.
9	Exchange 1 reports a simple option order accepted event for the second leg	Simple Option Order Accepted Event type: OOA exchange: Exch1 eventTimestamp: 20170420T142411.121456791	This section describes the Simple Option Order Accepted Event for Leg 2 corresponding to the complex

#	Step	Reported Event	Comments
		sequenceNumber: 909 optionID: 1492 orderID: 84736922 side: Sell quantity: 10 displayQty: 0 openClose: Open orderType: LEG timeInForce: DAY exchOriginCode: C coverage: Uncovered executingFirm: 999 complexOrderID: 8473692 complexOptionID: 9851 nbbPrice: 1.00 nbbQty: 10 nboPrice: 1.10 nboQty: 10 member: Mem01	option order described above. Note that in this Simple Option Order Accepted Event for Leg 2, the Routed Order ID is the same as reported in the parent complex order, however, the order ID for this leg is unique.
10	Exchange 1 reports a stock leg order accepted event for the third leg	Stock Leg Order Accepted Event: type: OSL exchange: Exch1 eventTimestamp: 20170420T142411.121456793 sequenceNumber: 909 symbol: XYZZY orderID: 84736923 side: Buy price: 29.90 quantity: 1000 displayQty: 0 orderType: LMT timeInForce: DAY clearingFirm: FRMA complexOrderID 8473692 complexOptionID: 9851 nbbPrice: 29.84 nbbQty: 10 nboPrice: 29.90 nboQty: 10 member: Mem01	This section describes the Stock Leg Order Accepted Event for Leg 3 corresponding to the complex option order described above.
11	Exchange 1 matches order for leg 1 to a market maker quote and executes trade	Option Trade Event: type: OT exchange: Exch1 eventTimestamp: 20170420T142411.123456795 sequenceNumber: 456 tradeID: 194378 optionID: 1491	This event describes a trade on the first leg (option 1491) of the complex option 9851. In this case, the trade event fills all of the (buy) quantity requested by the order, and all of the (sell) quantity

#	Step	Reported Event	Comments
		quantity: 10 price: 2.00 nbbPrice: 1.90 nbbQty: 10 nboPrice: 2.00 nboQty: 10 saleCondition: O Sell Side Details side: Sell leavesQty: 0 quoteID: 12345 executingFirm: 987 mktMkrSubAccount: ABC123 exchOriginCode: M liquidityCode: Added member: ABCD:AA Buy Side Details side: Buy leavesQty: 0 openCloseIndicator: Open orderID: 84736921 executingFirm: 999 exchOriginCode: C liquidityCode: Removed member: Mem01	offered by the market maker. Note that the order for the first option leg (created as a result of the complex order) is referenced in the buy side details, while the market maker quote for the underlying option (1491) of the first leg is referenced in the sell side details.
12	Exchange 1 matches order for leg 2 to a market maker quote and executes trade	Option Trade Event: type: OT exchange: Exch1 eventTimestamp: 20170420T142411.123456796 sequenceNumber: 1209 tradeID: 194379 optionID: 1492 quantity: 10 price: 1.00 nbbPrice: 1.00 nbbQty: 10 nboPrice: 1.10 nboQty: 10 saleCondition: O Sell Side Details side: Sell leavesQty: 0 openCloseIndicator: Open orderID: 84736922 executingFirm: 999 exchOriginCode: C liquidityCode: Removed	This event describes a trade on the second leg (option 1492) of the complex option 9851. Similarly, this trade event fills all of the (sell) quantity of the leg order generated as a result of the complex order. This trade has executed in ratio, as defined in complex option, to the trade on the first leg. Note that on this leg, the broker who placed the order is on the sell side, while the market maker is on the buy side.

#	Step	Reported Event	Comments
		member: Mem01 Buy Side Details side: Buy leavesQty: 0 quoteID: 67890 executingFirm: 987 mktMkrSubAccount: ABC123 exchOriginCode: M liquidityCode: Added member: ABCD:AA	
13	Exchange 1 routes stock leg order to the routing broker for execution on an away exchange	Option Route Event type: OOR exchange: Exch1 eventTimestamp: 20170420T142411.121656785 sequenceNumber: 2059 symbol: XYZZY orderID: 84736923 routingParty: FRMC routedOrderID: 8999999 session: 9 side: Buy price: 29.90 quantity: 1000 displayQty: 0 orderType: LMT coverage: Uncovered timeInForce: DAY result: ACK resultTimestamp: 20170420T142411.122656789 nbbPrice: 29.84 nbbQty: 10 nboPrice: 29.90 nboQty: 10 complexOrderID: 8473692 complexOptionID: 9851 member: Mem01	This event describes a route on the stock leg (Symbol = XYZZY) of the complex option 9851 to a routing broker for execution on an away exchange.
14	Routing broker routes to the away exchange, and receives a fill report when the order executes		
15	Exchange 1 receives fill notification from the routing broker	Stock Leg Fill Event type: OSLF exchange: Exch1 eventTimestamp: 20170420T142412.125656789	

#	Step	Reported Event	Comments
		sequenceNumber: 2088 fillID: 95321 symbol: XYZZY quantity: 1000 price: 29.90 saleCondition: OB side: Buy leavesQty: 0 orderID: 84736923 clearingFirm: FRMA clearingNumber: 123 member: Mem01	

8.6.1. JSON Examples

Quote Event (Step 2)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "sentTimestamp": "20170420T142036.123456",
  "eventTimestamp": "20170113T142036.123486789",
  "sequenceNumber": 1112,
  "marketMaker": "ABCD:AA",
  "optionID": "1491",
  "quoteID": "12345",
  "onlyOneQuote": true,
  "bidPrice": 1.90,
  "bidQty": 10,
  "askPrice": 2.00,
  "askQty": 10
}
```

Quote Event (Step 4)

```
{
  "type": "OQ",
  "exchange": "Exch1",
  "sentTimestamp": "20170420T142036.124456",
  "eventTimestamp": "20170113T142036.124486789",
  "sequenceNumber": 1125,
  "marketMaker": "ABCD:AA",
  "optionID": "1492",
  "quoteID": "67890",
  "onlyOneQuote": true,
  "bidPrice": 1.00,
  "bidQty": 10,
  "askPrice": 1.10,
  "askQty": 10
}
```

Complex Option Order Accepted Event (Step 7)

```
{
  "type": "OCOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "optionID": "9851",
  "orderID": "8473692",
  "side": "AsDirected",
  "routingParty": "FRMA",
  "routedOrderID": "4567123",
  "session": "7",
  "price": -30.90,
  "quantity": 10,
  "timeInForce": "DAY",
  "member": "Mem01"
}
```

Simple Option Order Accepted Event (Step 8)

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "optionID": "1491",
  "orderID": "84736921",
  "side": "Buy",
  "quantity": 10,
  "displayQty": 0,
  "openCloseIndicator": "Open",
  "orderType": "LEG",
  "timeInForce": "DAY",
  "exchOriginCode": "C",
  "coverage": "Uncovered",
  "executingFirm": "999",
  "nbbPrice": 1.90,
  "nbbQty": 10,
  "nboPrice": 2.00,
  "nboQty": 10,
  "complexOrderID": "8473692",
  "complexOptionID": "9851",
  "member": "Mem01"
}
```

Simple Option Order Accepted Event (Step 9)

```
{
  "type": "OOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "optionID": "1492",
  "orderID": "84736922",
}
```

```

"side": "Sell",
"quantity": 10,
"displayQty": 0,
"openCloseIndicator": "Open",
"orderType": "LEG",
"timeInForce": "DAY",
"exchOriginCode": "C",
"coverage": "Uncovered",
"executingFirm": "999",
"nbbPrice": 1.00,
"nbbQty": 10,
"nboPrice": 1.10,
"nboQty": 10,
"complexOrderID": "8473692",
"complexOptionID": "9851",
"member": "Mem01"
}

```

Stock Leg Order Accepted Event (Step 10)

```

{
  "type": "OSL",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "symbol": "XYZZY",
  "orderID": "84736923",
  "side": "Buy",
  "price": 29.90,
  "quantity": 1000,
  "displayQty": 0,
  "orderType": "LMT",
  "timeInForce": "DAY",
  "clearingFirm": "FRMA",
  "nbbPrice": 29.84,
  "nbbQty": 10,
  "nboPrice": 29.90,
  "nboQty": 10,
  "complexOrderID": "8473692",
  "complexOptionID": "9851",
  "member": "Mem01"
}

```

Option Trade Event (Step 11)

```

{
  "type": "OT",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.123456789",
  "sequenceNumber": 456,
  "tradeID": "194378",
  "optionID": "1491",
  "quantity": 10,
  "price": 2.00,
  "nbbPrice": 1.90,

```

```

"nbbQty": 10,
"nboPrice": 2.00,
"nboQty": 10,
"saleCondition": "O ",
"sellDetails": {
  "side": "Sell",
  "leavesQty": 0,
  "quoteID": "12345",
  "executingFirm": "987",
  "mktMkrSubAccount": "ABC123",
  "exchOriginCode": "M",
  "liquidityCode": "Added",
  "member": "ABCD:AA"
},
"buyDetails": {
  "side": "Buy",
  "leavesQty": 0,
  "openCloseIndicator": "Open",
  "orderID": "84736921",
  "executingFirm": "999",
  "exchOriginCode": "C",
  "liquidityCode": "Removed",
  "member": "Mem01"
}
}

```

Option Trade Event (Step 12)

```

{
  "type": "OT",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.123456789",
  "sequenceNumber": 1209,
  "tradeID": "194379",
  "optionID": "1492",
  "quantity": 10,
  "price": 1.00,
  "nbbPrice": 1.00,
  "nbbQty": 10,
  "nboPrice": 1.10,
  "nboQty": 10,
  "saleCondition": "O",
  "sellDetails": {
    "side": "Sell",
    "leavesQty": 0,
    "orderID": "84736922",
    "openCloseIndicator": "Open",
    "executingFirm": "999",
    "exchOriginCode": "C",
    "liquidityCode": "Removed",
    "member": "Mem01",
    "executionCodes" :{
      "INTLIQ": "A",
      "SUBLIQ": "S"
    }
  }
}

```

```

},
"buyDetails": {
  "side": "Buy",
  "leavesQty": 0,
  "quoteID": "67890",
  "executingFirm": "987",
  "mktMkrSubAccount": "ABC123",
  "exchOriginCode": "M",
  "liquidityCode": "Added",
  "member": "ABCD:AA",
  "executionCodes": {
    "INTLIQ": "A",
    "SUBLIQ": "S"
  }
}

```

Example CSV Corresponding to Step 12 - Options Trade Event:

```

OT,Exch1,20170420T142411.123456789,1209,,194379,1492,10,1.0,1.0,10,1.10,10,,
,Buy,0,Open,,84736922,999,,,C,Removed,INTLIQ=A|SUBLIQ=S,Mem01,Sell,0,,
67890,,687,,,,M,Added,INTLIQ=R|SUBLIQ=S,ABCD:AA

```

Option Route Event (Step 13)

```

{
  "type": "OOR",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121656789",
  "sequenceNumber": 2059,
  "symbol": "XYZZY",
  "orderID": "84736923",
  "routingParty": "FRMC",
  "routedOrderID": "8999999",
  "session": "9",
  "side": "Buy",
  "price": 29.90,
  "quantity": 1000,
  "displayQty": 0,
  "orderType": "LMT",
  "coverage": "Uncovered",
  "timeInForce": "DAY",
  "result": "ACK",
  "resultTimestamp": "20170420T142411.122656789",
  "nbbPrice": 29.84,
  "nbbQty": 10,
  "nboPrice": 29.90,
  "nboQty": 10,
  "complexOrderID": "8473692",
  "complexOptionID": "9851",
  "member": "Mem01"
}

```

Stock Leg Fill Event (Step 14)

```

{

```

```

"type": "OSLF",
"exchange": "Exch1",
"eventTimestamp": "20170420T142412.125656789",
"sequenceNumber": 2088,
"fillID": "95321",
"symbol": "XYZZY",
"quantity": 1000,
"price": 29.90,
"saleCondition": "OB",
"side": "Buy",
"leavesQty": 0,
"orderID": "84736923",
"clearingFirm": "FRMA",
"clearingNumber": "123",
"member": "Mem01"
}

```

8.7. Complex Option Order Modify Event Example

This example shows how to populate the Complex Option Order Modify Event with the routedOrderId because of a firm change to the order.

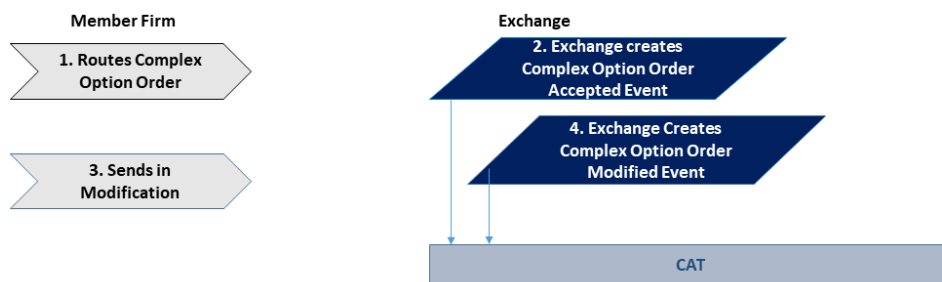


Figure 21: Complex Option Modify Event Example

#	Step	Reported Event	Comments
1	Member firm sends complex option order to the exchange	NA	
2.	Exchange 1 accepts the order and reports a Simple Complex Option Order Accepted Event	Complex Option Order Accepted Event type: OCOA exchange: Exch1 eventTimestamp: 20170420T142411.121456789 sequenceNumber: 909 optionID: 9851 orderID: 8473692 side: AsDirected routingParty: FRMA routedOrderID: 4567123 session: 7 price: -30.90 quantity: 10 timeInForce: DAY member: Mem01	The legs would be represented in OOA events as shown in example 8.9
3	Member firm sends in a new routedOrderID modifying the timeInForce value to "GTC". A complex order modify event is created to represent this scenario	NA	
4	The Exchange submits a Complex Option Order Modified Event to CAT.	Complex Option Oder Modified Event: type: OCOM exchange: Exch1 eventTimestamp: 20170420T142415.121456789 sequenceNumber: 922 optionID: 9851 orderID: 5790176 originalOrderID: 8473692 initiator: "Firm" price: -30.9 quantity: 10 leavesQty: 10 timeInForce "GTC" member: Mem01 routedOrderID = 4567124	The order was modified by the firm to change from a DAY order to a GTC order. Note that the inbound routedOrderID (Fix value ClOrdID Tag 11) sent in from the member firm is on the OCOM event.

8.7.1. JSON Examples

Complex Option Order Accepted Event (Step 7)

```
{
  "type": "OCOA",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142411.121456789",
  "sequenceNumber": 909,
  "optionID": "9851",
  "orderID": "8473692",
  "side": "AsDirected",
  "routingParty": "FRMA",
  "routedOrderID": "4567123",
  "session": "7",
  "price": -30.90,
  "quantity": 10,
  "timeInForce": "DAY",
  "member": "Mem01"
}

{
  "type": "OCOM",
  "exchange": "Exch1",
  "eventTimestamp": "20170420T142415.121456789",
  "sequenceNumber": 922,
  "optionID": "9851",
  "orderID": "5790176",
  "originalOrderID": 8473692
  "routedOrderID": "4567124",
  "price": -30.90,
  "quantity": 10,
  "timeInForce": "GTC",
  "member": "Mem01"
}
```

9. Submission Process

This section has been removed for security purposes.

10. Feedback and Corrections

This section has been removed for security purposes.

11. Testing

This section has been removed for security purposes.

12. Additional Information

Additional information is available from the CAT Public Website or the Service Desk. Details are provided below.

12.1. Public Website

Public Website (<http://www.catnmsplan.com>) is to provide primary information about CAT. The content includes: Link to SEC Rule 613, Press Releases, Technical Specifications, User Manuals, FAQs, Training Materials and Contact info.

12.2. FINRA CAT Help Desk

The FINRA CAT Helpdesk is the primary source for answers to questions about CAT, including questions regarding: clock synchronization, firm reporting responsibilities, interpretive questions, technical specifications for reporting to CAT and more. The FINRA CAT Helpdesk can be reached by phone at 888-696-3348 or e-mail at help@finracat.com.

Appendices

Appendix A. Clock Synchronization Requirement

In previous sections, details are described regarding the Order Events and data elements. Timestamp, as one of the required data elements for each order event, must be correctly recorded by Participants at a predefined granularity. This section provides detailed requirements and a recommended approach on how Participants should manage clock synchronization.

In order to comply with CAT NMS Plan requirements of Clock Synchronization and correctly record the Timestamp fields for order events, Participants are required synchronize Business Clocks, at a minimum, to within 100 microseconds of the time maintained by the National Institute of Standards and Technology (NIST).

The tolerance includes:

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

In order to ensure the accuracy of timestamps for Reportable Events, Participants are anticipated to adopt policies and procedures to verify such required synchronization each Trading Day (1) before the market opens, and (2) periodically throughout the Trading Day. Participants are recommended to keep documentation which provides details of their Business Clock synchronization process, and the resulting log files from the implementation of such processes.

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 Synchronization User Guide to be published separately.

Note: The tolerance for clock synchronization does not impact the amount of time allowed for CAT reporting. CAT does NOT require reporters to report order information within 100 microseconds of receiving an order.

Appendix B. Error Codes

An error code is a machine-parseable description of why a file or record was rejected. This differs from an error description, which is intended for human consumption. The following is a listing of errors codes for data ingestion and linkage processing.

B.1. Data Ingestion Errors

The table below contains error messages that are associated with Data Ingestion.

Table 82: Ingestion Error Codes

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/ Error
1	OE.INGEST,MD.REC, OD.REC, MMD.REC	.010	Required field is missing	Required field is missing	ERROR
2	OE.INGEST,MD.REC, OD.REC, MMD.REC	.020	Numeric value expected	Bad value for a numeric data type	ERROR
3	OE.INGEST, MD.REC, OD.REC, MMD.REC	.030	Integer Value expected	Bad value for an integer	ERROR
4	OE.INGEST, MD.REC, OD.REC, MMD.REC	.040	Unsigned Integer expected	Bad value for an unsigned integer	ERROR
5	OE.INGEST, MD.REC, OD.REC, MMD.REC	.050	Boolean Value expected	Bad value for a Boolean	ERROR
6	OE.INGEST, MD.REC, OD.REC, MMD.REC	.060	Invalid JSON format	Not in JSON format	ERROR
7	OE.INGEST, MD.REC, OD.REC, MMD.REC	.070	Exceeds maximum length of field	Invalid character length of a text or alpha numeric data type	ERROR
8	OE.INGEST, MD.REC, OD.REC, MMD.REC	.080	Invalid Timestamp Format	Invalid timestamp format	ERROR
9	OE.INGEST, MD.REC, OD.REC, MMD.REC	.090	Invalid Date Format	Invalid date format	ERROR
10	OE.INGEST, MD.REC, OD.REC, MMD.REC	.100	Value is not listed as a valid choice	Value is not listed as a valid choice	ERROR
11	OE.INGEST, MD.REC, OD.REC, MMD.REC	.110	JSON record has invalid Field Name	JSON record has invalid Field Name	ERROR
12	OE.INGEST, MD.REC, OD.REC, MMD.REC	.120	Text or alphanumeric type has an illegal character	Text or alphanumeric type has an illegal character	ERROR
13	OE.INGEST, MD.REC, OD.REC, MMD.REC	.130	Invalid name value pair data	NameValue value does not follow documented format	ERROR
14	OE.INGEST, MD.REC, OD.REC, MMD.REC	.140	Numeric value is missing required fraction digits	Numeric value is missing required fraction digits	ERROR
15	OE.INGEST, MD.REC,	.150	Numeric value is missing required whole	Numeric value is missing	ERROR

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
	OD.REC, MMD.REC		digits	required whole digits	
16	OE.INGEST	.160	CSV record has invalid number of fields	When, for tokenizing, a CSV line results in less tokens than required.	ERROR
17	OE.INGEST, MD.REC, OD.REC, MMD.REC	.170	Number of rows with errors exceed 10% of Row Count of Data File	Number of errors exceed 10% of Row Count of Data File	ERROR
18	OE.INGEST	.180	Record Offset referenced in Correction file is Invalid	Record Offset referenced in Correction file is Invalid	ERROR
19	OE.COUNT, MD.COUNT, OD.COUNT, MMD.COUNT	.190	File Record Count does not match metadata	File Record Count does not match metadata	ERROR
20	INT.META	.200	Mismatch in meta file	Mismatch in Metadata as compared to file name	ERROR
21 ²	OE.INGEST	.210	Invalid Symbol	Equity Symbol is Incorrect	WARNING
22	OE.INGEST, MD.REC, MMD.REC	.220	Invalid Member ID	Member ID is invalid	WARNING
23	FILE.NAME	.230	File Name is Invalid	File Name is Invalid (Invalid Format, Duplicate, File Name too Long, File Name for future date)	ERROR
24	OD.REC	.240	Invalid Option Series	Options Series is not in OCC database as a valid product	WARNING
25	OE.INGEST, MD.REC, OD.REC, MMD.REC	.250	Unknown message type	The message type specified in the record is unknown	ERROR
26	OE.INGEST, MD.REC, OD.REC, MMD.REC	.260	Sub-fields in Name/Value have value errors	Sub-fields in Name/Value have value errors	ERROR
27	OE.INGEST, MD.REC, OD.REC, MMD.REC	.270	Invalid array value for declared type	Invalid array value for declared type	ERROR
28	OE.INGEST, MD.REC, OD.REC, MMD.REC	.280	Expected CSV format is invalid	Expected CSV format is invalid	ERROR
29	OE.INGEST	.290	Numeric value is out of range	Numeric value is out of the allowed range as defined by the Data Dictionary	ERROR
30	FILE.TIMEOUT	.1050	Time out waiting for meta file		ERROR

² Error Codes .210 (Invalid Symbol) and .220 (Invalid Member ID) and .240 (Invalid Options Series) will be implemented in a later release. These codes are a WARNING and will **not** result in a reject. FINRA CAT will monitor submissions to ensure proper feedback is supplied to the Plan Participant.

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/ Error
31	FILE.TIMEOUT	.1060	Time out waiting for data file		ERROR
32	FILE.NAME	.1070	File is not compressed		ERROR

B.2 Linkage Discovery Errors

Linkage Discovery errors are generated by performing event comparisons that result in the identification of unlinked events. See §10.10 for information on the Linkage Discovery process.

Unlinked error codes are assigned based on a processing order when determining the reason for an unlinked event. The process begins with the check associated with the codes having the lowest sequence value. When the “Multiple Fields did not Match” reason is assigned, it is because a determination could not be made. In such cases, it is possible that the unlink reason is because the other party’s event was not reported or had a processing error which prevented the event from participating in Linkage Discovery. In cases when linkage did not occur between venues, separate error codes will be assigned to the CAT Reporter whose record did not link and the CAT Reporter that was named.

Table 83: Intravenue Linkage Error Codes

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/ Error
1	OE.INTRAEXCHLNK	.5000	Missing a parent	The event in question does not have a required parent.	ERROR
2	OE.INTRAEXCHLNK	.5001	Trade Event – Order/Quote not found	The Trade Event side details reference an Order Key/Quote Key that does not exist in CAT because it was not reported or was rejected.	ERROR
3	OE.INTRAEXCHLNK	.5002	Paired Orders - Corresponding Paired Order Not found	The paired order in orderAttributes name/value pair does not match another order.	ERROR
4	OE.INTRAEXCHLNK	.5003	Originating event not found for long Lived order	This is for the order restatement event errors specifically. Occurs if OORS event is received, and the events from the previous day(s) are not found.	ERROR
5	OE.INTRAEXCHLNK	.5004	Matching trade not found	A post trade allocation/supplemental trade event refers to a trade that cannot be located	ERROR
6	OE.INTRAEXCHLNK	.5005	Late record, correction, or file replacement received after correction window (received after t+3 at 8:00am)	Any input received after the correction window	WARNING

Table 84: Intervene Linkage Error Codes (Reported by Exchange)

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
1	OE.INTERVENUENLK	.6004	<i>routedOrderID</i> not found	The <i>routedOrderID</i> on the exchange Order Route event does not match to a corresponding <i>routedOrderID</i> on the industry member order	ERROR
2	OE.INTERVENUENLK	.6006	<i>routingParty</i> did not match	A matching <i>routedOrderID</i> was identified; however, the <i>routedOrderID</i> on the exchange Order Route event does not match to a corresponding <i>senderIMID</i> on the industry member order	ERROR
3	OE.INTERVENUENLK	.6008	<i>symbol</i> did not match OR <i>optionID</i> did not match	A matching <i>routedOrderID</i> was identified, however the <i>symbol</i> [for equity events] or <i>optionId</i> [for option events] on the exchange Order Route event does not match to a corresponding symbol or optionID on the industry member order	ERROR
4	OE.INTERVENUENLK	.6010	<i>session</i> did not match	A matching <i>routedOrderID</i> was identified, however, the <i>session</i> on the exchange Order Route event does not match to a corresponding session on the industry member order	ERROR
5	OE.INTERVENUENLK	.6012	Multiple fields did not match	A matching <i>routedOrderID</i> was identified, however, the symbol, senderIMID or a combination of fields on the exchange Order Route event does not match to a corresponding fields on the industry member order	ERROR
6	OE.INTERVENUENLK	.6014	<i>destination</i> did not match	A matching <i>routedOrderID</i> was identified in an industry member order; however, the <i>exchange_id</i> on the Order Route event did not match the <i>destination</i> on the corresponding industry member order.	ERROR

Table 85: Intervene Linkage Error Codes (Reported by Firm)

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
1	OE.INTERVENUENLK	.7005	<i>Named routedOrderID</i> not found	The <i>routedOrderID</i> reported by the Industry Member on the Order Route event does not match to a corresponding <i>routedOrderID</i> on the exchange order.	ERROR
2	OE.INTERVENUENLK	.7007	<i>Named routingParty</i> did not match	A matching <i>routedOrderID</i> was identified; however, the <i>senderIMID</i> on industry member order <i>did not match the routingParty</i> on the exchange order	ERROR
3	OE.INTERVENUENLK	.7009	<i>Named symbol</i> did not match OR	A matching <i>routedOrderID</i> was identified, however the <i>symbol</i> [for equity events] or <i>optionId</i> [for option events] did not match	ERROR

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
			<i>Named optionID</i> did not match	on the corresponding <i>symbol/optionID</i> on the exchange order	
4	OE.INTERVENUELNK	.7011	<i>Named session</i> did not match	A matching <i>routedOrderID</i> was identified, however, the <i>session</i> did not match the <i>session</i> on the corresponding exchange order.	ERROR
5	OE.INTERVENUELNK	.7013	Named Multiple fields did not match	A matching <i>routedOrderID</i> was identified, however, the <i>symbol</i> , <i>senderIMID</i> or a combination of fields reported on the Order Route event did not match the <i>symbol</i> or <i>routingParty</i> on the corresponding exchange order.	ERROR
6	OE.INTERVENUELNK	.7015	Named <i>destination</i> did not match	Named in an industry member order but the <i>destination</i> on the industry member order route did not match the <i>exchange_id</i> reported on the corresponding Order Route event.	ERROR

Table 86: Off-Exchange Trade Linkage Error Codes (Reported by Exchange)

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
1	OE.TRADELNK	.4002	Matching <i>tapeTradeID</i> cannot be found	The unique identifier (e.g., Branch Sequence Number, Compliance ID) provided on the TRF/ADF/ORF Trade Report did not match the <i>tapeTradeID</i> reported by the Industry Member on a Trade event	ERROR
2	OE.TRADELNK	.4004	<i>marketCenterId</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but Market Center Id provided on the TRF/ADF/ORF Trade Report did not match the <i>marketCenterId</i> reported by the Industry Member on a Trade event	ERROR
3	OE.TRADELNK	.4006	<i>symbol</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but the <i>symbol</i> provided on the TRF/ADF/ORF Trade Report did not match the <i>symbol</i> reported by the Industry Member on a Trade event	ERROR
4	OE.TRADELNK	.4010	<i>Reporting or Contra IMID</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but the <i>Reporting or Contra IMID</i> provided on the TRF/ADF/ORF Trade Report did not match the CATReporterIMID reported by the Industry Member on a Trade event	ERROR
5	OE.TRADELNK	.4012	Multiple fields did not match	A TRF/ADF/ORF Trade Report with a matching unique identifier (e.g. Branch Sequence Number) was found however <i>symbol</i> , <i>MarketCenterID</i> , <i>CATReporterIMID</i> or a combination of fields provided on the TRF/ADF/ORF Trade Report did not match the corresponding fields in the Industry Member on a Trade event	ERROR

Table 87: Off-Exchange Trade Linkage Error Codes (Reported by TRF)

#	Error Prefix	Error Code	Error Code Description	Explanation	Warning/Error
1	OE.TRADELNK	.5003	<i>Named</i> - Matching <i>tapeTradeID</i> cannot be found	The <i>tapeTradeID</i> reported by the Industry Member on a Trade event did not match to a corresponding <i>tapeTradeID</i> Compliance ID in the TRF/ADF/ORF Trade Report	ERROR
2	OE.TRADELNK	.5005	<i>Named</i> - <i>marketCenterId</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but <i>marketCenterId</i> reported by Industry Member did not match the Execution Time on the TRF/ADF/ORF trade report	ERROR
3	OE.TRADELNK	.5007	<i>Named</i> - <i>symbol</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but the <i>symbol</i> reported by Industry Member did not match the <i>symbol</i> on the TRF/ADF/ORF trade report	ERROR
4	OE.TRADELNK	.5009	<i>Named</i> - Multiple fields did not match	A TRF/ADF/ORF Trade Report with a matching unique identifier (such as Branch Sequence Number) was found however <i>symbol</i> , <i>MarketCenterID</i> , <i>CATReporterIMID</i> or a combination of fields reported by Industry Member did not match to the corresponding fields on the TRF/ADF/ORF trade report	ERROR
5	OE.TRADELNK	.5011	<i>Named</i> – <i>CATReporterIMID</i> cannot be found	A matching <i>tapeTradeID</i> was identified, but the <i>CATReporterIMID</i> reported by Industry Member did not match the <i>Reporting or Contra IMID</i> on the TRF/ADF/ORF trade report	ERROR

B.3. Error Prefix Definition

Table 88: Error Prefix Definitions

#	Error Prefix	Definition
1	FILE.NAME	File name validation errors
2	FILE.TIMEOUT	Data and corresponding acknowledgement
3	INT.META	Error on metadata file validation against its corresponding data file name.
4	MD.REC	Error on Member Dictionary file validation
5	OD.REC	Error on Options Dictionary file validation
6	MMD.REC	Error on Market Maker Dictionary file validation
7	OE.INGEST	Error on Order Events file validation
8	OE.INTRAEXCHLNK	Error or warning in Order Events during Intra Exchange Linkage Validation
9	OE.INTERVENUELNK	Error during linkage between Industry Member Order Events and Exchange Order Events (applicable to option and equity exchanges)
10	OE.TRADELNK	Error during linkage between Industry Member Order Events and TRF reported data

Appendix C. Corporate Action Formats

C.1. NASDAQ Specifications

NASDAQ will submit all data for the day using a single file type, similar to all other file submissions, with the base filename NASDDaily. The file will contain any or all record types listed in this section, and shall be submitted in JSON format. Note that each record type is identified by a type field.

C.1.1. NASDAQ Equities Daily List - Notes for the Day

Table 89: Equities Daily List - Notes for the Day

Field Name	Type	Description	Include Key
type	Message Type	QDNFD	R
distributedTimestamp	Timestamp	The date and time the NASDAQ Daily List was distributed.	R
notesForDay	Text (1000)	Free form text allowing for the entry of notes pertaining to the entire NASDAQ Daily List for the day.	R

C.1.2. NASDAQ Equities Daily List

Table 90: Equities Daily List

Field Name	Type	Description	Include Key
type	Message Type	QDEDL	R
distributedTimestamp	Timestamp	The date and time the NASDAQ Daily List was distributed.	R
effectiveDate	Date	The date that the event is effective.	R
issueEvent	Text (255)	The category of the change to the affected security. Allowed Values: • Security Additions • Anticipated Security Additions • Issue Suspensions • Issue Deletions • Name/Symbol Changes • Market Class Changes • Market Participant Additions • Market Participant Changes	R

Field Name	Type	Description	Include Key
		- Market Participant Deletions - Financial Status Changes	
symbol	Symbol	The symbol of the security or market participant that is being affected.	R
companyName	Text (255)	The name of the issuing company for the security.	R
newSymbol	Symbol	The new symbol for a security or market participant experiencing a symbol change.	O
newCompanyName	Text (255)	The new name for a security or market participant experiencing a name change.	O
marketCategory	Text (5)	The Market Category and Newspaper Category of the NASDAQ Issue. Allowed Values: Q NASDAQ Global Select MarketSM G NASDAQ Global MarketSM S NASDAQ Capital MarketSM	R
listingCenter	Exchange ID	The exchange or stock market on which the issue has its primary listing.	R
firstDateTraded	Date	For Security Additions, the date that the security began quoting on NASDAQ OMX NASDAQ.	R
entryNotes	Text (1000)	Free form text allowing for entry of notes pertaining to the single entry. Information regarding the following fields will now be included within this field: - Event Comment - Reinstatement Flag - Redemption Date - Expiration Date fields	O
delistingReason	Text (100)	The reason an issue is to be deleted from NASDAQ Listing. Allowed values: - Acquisition/Merger - Added to OTCBB - Added to other OTC - ADR Program Termination - Called for Redemption - Company Choice/Corporate Reorganization Pending - Company Choice/Regulatory Matter Pending - Corporate Reorganization (already effective) - Expiration	O

Field Name	Type	Description	Include Key
		- Form 15 - Liquidation - Listed on NYSE - Listed on NYSE Amex - Listed on NYE ARCA - Listed on CBOE - Listed NCM - Listed NGM - Listed NGS - Listed BATS - Other - Regulatory/Non-Compliance - Removed from Listing & Registration	
downgradeReason	Text (60)	Downgrade Reason The reason an issue is changing Market Categories. Allowable values: - Qualification Issue - Company Request	O
From this point on, all data is as of the NASDAQ Daily List Date - not the Effective date. For a future effective NASDAQ Daily List entry, these fields will be the CURRENT Day not the future Effective Date. For instance, for a Symbol Change due to a stock split, the following data fields will be the current information not the next day's resulting information that is based on the stock split.			
expirationDate	Date	The date that a security (preferred issue, unit, warrant for instance) is expiring.	O
separationDate	Date	The date that a unit or warrant is separating from the associated common stock.	O
issueDescription	Text (255)	Text describing the characteristics of the Issue.	O
issueKind	Text (1)	The type of issue: common, preferred, etc. Allowed values: A American Depositary Shares B Bond C Common Stock F Depository Receipt I 144A L Limited Partnership N Notes O Ordinary Shares P Preferred Stock Q Other Securities R Right S Shares of Beneficial Interest T Convertible Debenture U Unit V Units/Benif Int W Warrant	R

Field Name	Type	Description	Include Key
issueSubType	Text (2)	Allowed Values: - A Preferred Trust Securities - B Index-Based Derivative - C Common Shares - CB Commodity Based Trust Shares - CF Commodity Futures Trust Shares - CL Commodity-Linked Securities - CM Commodity Index Trust Shares - CT Currency Trust Shares - CU Commodity-Currency-Linked Securities - CW Currency Warrants - D Global Depositary Shares - E ETF-Portfolio Depositary Receipt - EG Equity Gold Shares - EI ETN-Equity Index-Linked Securities - EN Exchange-Traded Notes - FI ETN-Fixed Income-Linked Securities - FL ETN-Futures-Linked Securities - G Global Shares - H Debt-Based Derivative - I ETF-Index Fund Shares - IX Index-Linked Exchangeable Notes - K Callable Common Stock - L Contingent Litigation Right - LL Identifies securities of companies that are set up as a Limited Liability Company (LLC) - M Equity-Based Derivative - MF Managed Fund Shares - ML ETN-Multi-Factor Index-Linked Securities - MP Master Limited Partnership - MT Managed Trust Securities - N NY Registry Shares - O Open Ended Mutual Fund - P Privately Held Security - PU Partnership Units - R Reg-S - RC Commodity-Redeemable Commodity-Linked Securities - RF ETN-Redeemable Futures-Linked Securities - RU Commodity-Redeemable Currency-Linked Securities - S SEED - T Tracking Stock - TC Trust Certificates - TU Trust Units - U Portal - V Contingent Value Right - W Trust Issued Receipts	O
whenIssuedFlag	Boolean	Indicates if the issue is in the When Issued state.	R
whenDistributedFlag	Boolean	Indicates if the issue is in the When Distributed state.	R
SICCode	Alphanumeric (4)	A four character numeric code providing a logical grouping of issues based on type of business.	O
tradeUnitQuantity	Unsigned	The normal, generally accepted unit of trading for a security, also known as a "round lot". The trade unit (round lot) for common stocks is usually 100. Any	R

Field Name	Type	Description	Include Key
		purchase or sale of less than the trade unit is considered an "odd lot".	
transferAgent	Text (256)	The custodial firm responsible for administrative duties concerning the issue. A semicolon in this field will separate multiple values.	O
TSO	Unsigned	The number of issued and outstanding shares for the specified security as used by NASDAQ in the calculation of NASDAQ index values. The number of total shares outstanding used by NASDAQ for index calculation reflects the value most recently reported for the security by the issuing corporation, via required SEC filings or other communication with NASDAQ, as adjusted for any corporate actions such as stock dividends. However, use and display of a newly reported value may be briefly delayed pending review for accuracy and/or the facilitation of the management of the indices. Also, values for certain non-U.S. securities may not include all shares globally issued and outstanding.	R
TSODate	Date	The effective date of the TSO.	R
insiderHoldings	Unsigned	The number of shares held by insiders (directors, executives, etc.) at the firm.	R
floatShares	Unsigned	The number of shares available for transaction in the secondary market.	R
oldFinancialStatus	Text (40)	The current day's financial status indicator of a NASDAQ-listed issuer. Financial status indicator denotes if a NASDAQ issuer is delinquent in its regulatory filings, below NASDAQ continuing listing requirements, and/or bankrupt. Allowed Values: - D Deficient - E Delinquent - Q Bankrupt - N Normal - G Deficient and Bankrupt - H Deficient and Delinquent - J Delinquent and Bankrupt - K Deficient, Delinquent, and Bankrupt	R
newFinancialStatus	Text (40)	The new or changed financial status indicator of a NASDAQ-listed issuer. This field will only be populated for records where the issue event field is "Financial Status Changes" Allowed Values: - D Deficient - E Delinquent - Q Bankrupt - N Normal - G Deficient and Bankrupt - H Deficient and Delinquent	O

Field Name	Type	Description	Include Key
		J Delinquent and Bankrupt K Deficient, Delinquent, and Bankrupt	
IPOFlag	Boolean	Indicates if the issue is conducting an Initial Public Offering (IPO). This flag will be set to <code>true</code> for those securities that are conducting an IPO, for the following events: - Security Additions - Anticipated Security Additions	R
countryOfIncorporation	Text (2)	Provides the country where the issuer of a NASDAQ-listed security was incorporated.	R
leveragedETPFlag	Boolean	Indicates if the issue is a leveraged NASDAQ-listed exchange-traded fund (ETP).	R
leveragedETPRatio	Text (5)	Indicates the ratio at which the leveraged ETP operates as compared to the underlying index.	O
inverseETPFlag	Boolean	Indicates if the issue is an inverse NASDAQ-listed exchange-traded fund (ETP).	R
LULDTierIndicator	Text (1)	Indicates the tier that a security will be monitored in relation to the Limit Up-Limit Down rule. 1 NMS Stocks included in the S&P 500 Index, the Russell 1000 Index, and the exchange-traded products ("ETP") listed on Schedule 1 in the SEC approval order. 2 All NMS Stocks other than those in Tier 1.	R

C.1.3. NASDAQ Dividends Daily List

Table 91: Dividends Daily List

Field Name	Type	Description	Include Key
type	Message Type	QDDL	R
distributionTimestamp	Timestamp	The date and time the NASDAQ Daily List was distributed.	R
marketCategory	Text (5)	The Market Category of a security. Allowed Values: B OTCBB G NASDAQ Global MarketSM P Private Placement Securities Q NASDAQ Global Select MarketSM R OTC Securities S NASDAQ Capital MarketSM	R

Field Name	Type	Description	Include Key
		BOND BOND POR Portal	
symbol	Symbol	The symbol of the issue experiencing the dividend.	R
companyName	Text (255)	The name of the issuing company for the fund.	R
declarationDate	Date	The date the dividend was declared.	R
amount	Text (255)	The amount of a dividend.	R
amountCode	Text (5)	These codes are used to qualify the amount. Allowed Values: apx approximate ann annual cdn Canadian ext extra fnl final inc Increase SA semiannual stk stock div spl special	O
paymentFreq	Text (1)	If available, the value indicates the payment frequency of the dividend. Allowed Values: M Monthly Q Quarterly S Semi-Annual A Annual	O
xDate	Date	The X-Date of a dividend. The X-date represents the date that the issue will be quoted without ("ex") the value of the dividend.	R
recordDate	Date	The record date of a dividend. The record date represents the date that all holders of record are entitled to the dividend payment.	R
paymentDate	Date	The payment date of a dividend. The payment date represents the date that all holders of record receive the dividend.	R
dividendNotes	Text (255)	Free form text allowing for entry of notes pertaining to the single entry. This field contains relevant information regarding the dividend and/or comments pertaining to the following: • Declaration Date • Amount • X-Date • Record Date • Payment Date	O

Field Name	Type	Description	Include Key
dividendTypeID	Text (2)	This field will contain an indicator to depict the type of Corporate Action occurring to the Issue. Allowed Values: XC Cash Dividend CS Cash and Stock Dividend or Split XR Ex-Rights XW Ex-Warrants RS Reverse Split SO Spin Off CP Stock Div. payable in another Company XS Stock Dividend or Split XX Other	O
stockAmount	Numeric (6,4)	When applicable, a numeric factor relating the ratio of the stock dividend. For Example: The factor for a 2/1 stock split would be 2 The factor for a 2/1 reverse split would be .5 The factor for a 3/2 stock split would be 1.5 The factor for a stock dividend of 10% would be 1.10. The factors reflect the amount that NASDAQ adjusted the stock price by on the X-Date. In cases where the Factor values differ from the Amount values, the factor will always take precedence. This occurs frequently with ADS and ADR issues types; where NASDAQ is occasionally obligated to adjust on X-Date based on an approximate value. Other cases can result from truncation or rounding, but the factor will always reflect the field the stock price is adjusted by. Also, please note that entries without an X-Date do not get adjusted, even though a factor may be provided.	O
cashAmount	Numeric (6,4)	When applicable, this field will contain a numeric factor relating the ratio of the cash dividend. For example, the factor for an 8-cent dividend would be .08. Please note: In instances where a NASDAQ-listed issue has declared a dividend that is subject to certain taxes and fees and there is a GROSS amount and a NET amount, this field will represent the GROSS amount.	O
qualDiv	Text (1)	Indicator used to reflect information provided by an Issuer about the dividend with regard to the taxation of the dividend under the provisions of The Jobs and Growth Tax Relief Reconciliation Act of 2003 (the "2003 Act"). This dividend status may reduce the tax on dividends, subject to all other eligibility requirements contained in the 2003 Act.	O

Field Name	Type	Description	Include Key
		Allowed Values: Y Issuer has affirmed that dividend is Qualified under the 2003 Act. N Issuer has affirmed that dividend is Not Qualified under the 2003 Act. U Issuer has made no affirmation regarding the Qualified vs. Non-Qualified status of the dividend.	
rightsBasisNotes	Text (255)	Free form text allowing for the entry of the proportionate number of shares of an issue which the owner can purchase at the exercise price for each right owned.	O
rightsExercisePrice	Price	The exercise price of the rights.	O
rightsExpirationDate	Date	The date on which the rights associated with the dividend expire.	O
netAmount	Price	In instances where a NASDAQ-listed issue has declared a dividend that is subject to certain taxes and fees and there is a GROSS amount and a NET amount, this field will represent the Net amount.	O

C.1.4. NASDAQ Next Day X-Rates Daily List

Table 92: Next Day X-Rates Daily List

Field Name	Type	Description	Include Key
type	Message Type	QDXDL	R
distributionTimestamp	Timestamp	The date and time the NASDAQ Daily List was distributed.	R
marketCategory	Text (5)	The Market Category of a security. Allowed Values: B OTCBB G NASDAQ Global MarketSM P Private Placement Securities Q NASDAQ Global Select MarketSM R OTC Securities S NASDAQ Capital MarketSM BOND BOND POR Portal	R
symbol	Symbol	The symbol of the issue experiencing the dividend.	R
companyName	Text (255)	The name of the issuing company for the fund.	R
dividendTypeID	Text (2)	This field will contain an indicator to depict the type of Corporate Action occurring to the Issue.	O

Field Name	Type	Description	Include Key
		Allowed Values: XC Cash Dividend CS Cash and Stock Dividend or Split XR Ex-Rights XW Ex-Warrants RS Reverse Split SO Spin Off CP Stock Div. payable in another Company XS Stock Dividend or Split XX Other	
amount	Text (255)	The amount of a dividend.	R
amountCode	Text (5)	These codes are used to qualify the amount. Allowed Values: apx approximate ann annual cdn Canadian ext extra fnl final inc Increase SA semiannual stk stock div spl special	O
paymentFreq	Text (1)	If available, the value indicates the payment frequency of the dividend. Allowed Values: M Monthly Q Quarterly S Semi-Annual A Annual	O
dividendNotes	Text (255)	Free form text allowing for entry of notes pertaining to the single entry.	O
cancelOrders	Boolean	This field will indicate if open orders should be canceled.	R
stockAmount	Numeric (6,4)	When applicable, a numeric factor relating the ratio of the stock dividend. For Example: The factor for a 2/1 stock split would be 2 The factor for a 2/1 reverse split would be .5 The factor for a 3/2 stock split would be 1.5 The factor for a stock dividend of 10% would be 1.10. The factors reflect the amount that NASDAQ adjusted the stock price by on the X-Date. In cases where the Factor values differ from the Amount	O

Field Name	Type	Description	Include Key
		values, the factor will always take precedence. This occurs frequently with ADS and ADR issues types; where NASDAQ is occasionally obligated to adjust on X-Date based on an approximate value. Other cases can result from truncation or rounding, but the factor will always reflect the field the stock price is adjusted by. Also, please note that entries without an X-Date do not get adjusted, even though a factor may be provided.	
cashAmount	Numeric (6,4)	When applicable, this field will contain a numeric factor relating the ratio of the cash dividend. For example, the factor for an 8-cent dividend would be .08. Please note: In instances where a NASDAQ-listed issue has declared a dividend that is subject to certain taxes and fees and there is a GROSS amount and a NET amount, this field will represent the GROSS amount.	O
newTSO	Unsigned	The resulting Total Shares Outstanding (TSO) value due to the Stock Dividend or Stock Split occurring for this issue.	O
qualDiv	Text (1)	Indicator used to reflect information provided by an Issuer about the dividend with regard to the taxation of the dividend under the provisions of The Jobs and Growth Tax Relief Reconciliation Act of 2003 (the "2003 Act"). This dividend status may reduce the tax on dividends, subject to all other eligibility requirements contained in the 2003 Act. Allowed Values: Y Issuer has affirmed that dividend is Qualified under the 2003 Act. N Issuer has affirmed that dividend is Not Qualified under the 2003 Act. U Issuer has made no affirmation regarding the Qualified vs. Non-Qualified status of the dividend.	O
rightsBasisNotes	Text (255)	Free form text allowing for the entry of the proportionate number of shares of an issue which the owner can purchase at the exercise price for each right owned.	O
rightsExercisePrice	Price	The exercise price of the rights.	O
rightsExpirationDate	Date	The date on which the rights associated with the dividend expire.	O
netAmount	Price	In instances where a NASDAQ-listed issue has declared a dividend that is subject to certain taxes and fees and there is a GROSS amount and a NET amount, this field will represent the Net amount.	O

C.2. BATS Specifications

BATS will submit all reports using one single file type, with the base filename BATSDaily. Each report will be submitted in CSV format, where the first column designates the type of that record. Each record type may have different numbers of columns, but each record of the same type must have all columns in the definition for that record type.

C.2.1. Header Record

The very first record of the file must be a header record, which provides general information about the submitted records. There must be exactly one header record, which contains the following fields.

Table 93: Header Record Fields

Col	Field Name	Type	Description
1	type	Message Type	BDHDR
2	Environment	Text (10)	The environment for which the file was generated. Allowed values: - CERT = Certification - PROD = Production
3	Report Date	Date	The date that the report was published.
4	Record Count	Unsigned	The total number of records in the file, including the header.

C.2.2. Daily Listed Securities Record

Table 94: Daily Listed Securities Record Fields

Col	Field Name	Type	Description
1	type	Message Type	BDLS
2	symbol	Symbol	Symbol of Listed Security (upper case) in CMS symbology.
3	Issue Name	Text (255)	A text field representing the name of the issue.
4	Issue Type	Text (128)	The type of issue: common, preferred, etc. Allowed values: - Commodity Futures Trust Shares - Commodity Index Trust Shares - Commodity-Based Trust Shares

Col	Field Name	Type	Description
			- Commodity-Linked Securities - Convertible Debt - Currency Trust Shares - Currency Warrants - Derivative Securities Traded under UTP - Equity Gold Shares - Equity Index-Linked Securities - Fixed Income Index-Linked Securities - Futures-Linked Securities - Index Fund Shares - Index Warrants - Index-Linked Exchangeable Notes - Managed Fund Shares - Managed Trust Securities - Multifactor Index-Linked Securities - Other Securities - Partnership Units - Portfolio Depository Receipts - Preferred Stock - Primary Equity - Right - Secondary Class of Common - Selected Equity-linked Debt Securities (SEEDS) - Trust Certificates - Trust Issued Receipts - Trust Units - Units - Warrant
5	Currency	Text (14)	Currency of the issue (ISO code)
6	Outstanding Shares	Unsigned	Integer representing the number of shares outstanding for the issue.
7	Test Symbol	Boolean	Indicates whether or not the issue is a test symbol.
8	Market Category	Text (15)	The Market Category of a security.
9	First Date Traded	Date	The date the issue first traded as a BZX Listed Issue
10	IPO Flag	Boolean	Indicates if the issue conducted an Initial Public Offering on Bats.
11	Expiration Date	Date	Date that a security (warrant, when issued, etc.) expires.
12	Separation Date	Date	Date that a unit or warrant is separating from the associated common stock.
13	When Issued Flag	Boolean	Indicates if the issue is in a "when-issued" status.

Col	Field Name	Type	Description
14	When Distributed Flag	Boolean	Indicates if the issue is in a "when-distributed" status.
15	Round Lot Quantity	Unsigned	Integer indicating the number of shares that define a round lot.
16	Issue Notes	Text (1000)	Free-form text field for notes pertaining to the issue.
17	Financial Status	Text (100)	Values: 0 – Normal 1 – Bankrupt 2 – Below Continuing Listing Standards 3 – Bankrupt & Below Continuing Listing Standards 4 – Late Filing 5 – Bankrupt & Late Filing 6 – Below Continuing Listing Standards & Late Filing 7 – Bankrupt, Below Continuing Listing Standards & Late Filing 8 – Creations Suspended (for Exchange Traded Product) 9 – Redemptions Suspended (for Exchange Traded Product) A – Liquidation (for Exchange Traded Product)

C.2.3. Daily Distribution Record

Table 95: Daily Distribution Record Fields

Col	Field Name	Type	Description
1	type	Message Type	BDD
2	symbol	Symbol	Symbol of Listed Security (upper case) in CMS symbology.
3	Issue Name	Text (255)	A text field representing the name of the issue.
4	Issue Type	Text (128)	The type of issue: common, preferred, etc. Allowed values: - Commodity Futures Trust Shares - Commodity Index Trust Shares - Commodity-Based Trust Shares - Commodity-Linked Securities - Convertible Debt - Currency Trust Shares - Currency Warrants

Col	Field Name	Type	Description
			• Derivative Securities Traded under UTP • Equity Gold Shares • Equity Index-Linked Securities • Fixed Income Index-Linked Securities • Futures-Linked Securities • Index Fund Shares • Index Warrants • Index-Linked Exchangeable Notes • Managed Fund Shares • Managed Trust Securities • Multifactor Index-Linked Securities • Other Securities • Partnership Units • Portfolio Depository Receipts • Preferred Stock • Primary Equity • Right • Secondary Class of Common • Selected Equity-linked Debt Securities (SEEDS) • Trust Certificates • Trust Issued Receipts • Trust Units • Units • Warrant
5	Currency	Text (14)	Currency of the issue (ISO code)
6	Outstanding Shares	Unsigned	Integer representing the number of shares outstanding for the issue.
7	Corporate Action Type	Text (80)	A text field containing the type of corporate action. Allowed values: • Cash Dividend • Long-Term Capital Gain • Short-Term Capital Gain • Reverse Split • Stock Split • Spin Off • Stock Dividend • Ex-Rights • Ex-Warrants • Other
8	Corporate Action ID	Unsigned	An integer value that will uniquely identify the corporate action. This identifier will be unique across all corporate action types.
9	Corporate Action	Text (80)	The status of the data associated with the corporate

Col	Field Name	Type	Description
	Status		action. Allowed values: Added = Added since last report Canceled = Canceled since last report Unchanged = No update since last report Updated = Updated since last report
10	Cancellation Reason	Text (255)	If the Corporate Action Status is "Canceled" this field will supply a reason for the cancellation.
11	Declared Date	Date	The date when the corporate action was announced.
12	Updated Date	Date	The date when the data associated with the corporate action was last updated.
13	Frequency	Text (100)	If applicable, indicates the frequency of the distribution. Allowed values: • Monthly • Quarterly • Semi-annually • Annually • One Time/Special
14	Ex-Date	Date	Represents the first date that the issue will be quoted without ("ex") the dividend or distribution.
15	Record Date	Date	The date that all holders of record are entitled to a distribution payment.
16	Payment Date	Date	The date that the distribution is paid to the share owner.
17	Cash Amount	Price	When applicable a numeric factor relating the amount of the cash dividend. For example, a 7-cent dividend would carry a value of 0.07 in this field.
18	Stock Amount	Price	When applicable a numeric factor relating the ratio of the stock dividend/split. For example, a 2-for-1 stock split would result in a value of 2 in this field whereas a 1-for-2 reverse stock split would result in a value of 0.5.
19	Rights Exercise Price	Price	The exercise price of the rights.
20	Rights Expiration Date	Date	The date on which the rights expire.
21	Issue Notes	Text (1000)	Free-form text field containing information about the distribution that is not reflected in one of the other fields.

C.2.4. Daily Corporate Action Record

Table 96: Daily Corporate Action Record Fields

Col	Field Name	Type	Description
1	type	Message Type	BDCA
2	symbol	Symbol	Symbol of Listed Security (upper case) in CMS symbology.
3	Issue Name	Text (255)	A text field representing the name of the issue.
4	Issue Type	Text (128)	The type of issue: common, preferred, etc. Allowed values: • Commodity Futures Trust Shares • Commodity Index Trust Shares • Commodity-Based Trust Shares • Commodity-Linked Securities • Convertible Debt • Currency Trust Shares • Currency Warrants • Derivative Securities Traded under UTP • Equity Gold Shares • Equity Index-Linked Securities • Fixed Income Index-Linked Securities • Futures-Linked Securities • Index Fund Shares • Index Warrants • Index-Linked Exchangeable Notes • Managed Fund Shares • Managed Trust Securities • Multifactor Index-Linked Securities • Other Securities • Partnership Units • Portfolio Depository Receipts • Preferred Stock • Primary Equity • Right • Secondary Class of Common • Selected Equity-linked Debt Securities (SEEDS) • Trust Certificates • Trust Issued Receipts • Trust Units • Units • Warrant
5	Currency	Text (14)	Currency of the issue (ISO code)

Col	Field Name	Type	Description
6	Outstanding Shares	Unsigned	Integer representing the number of shares outstanding for the issue.
7	Corporate Action Type	Text (80)	The type of action. Allowed values: • Delisting • ID Change • Name Change • New Listing • Symbol Change • Other
8	Corporate Action ID	Unsigned	An integer value that will uniquely identify the corporate action. This identifier will be unique across all corporate action types.
9	Corporate Action Status	Text (80)	The status of the data associated with the corporate action. Allowed values: Added = Added since last report Canceled = Canceled since last report Unchanged = No update since last report Updated = Updated since last report
10	Cancellation Reason	Text (255)	If the Corporate Action Status is "Canceled" this field will supply a reason for the cancellation.
11	Declared Date	Date	The date when the corporate action was announced.
12	Updated Date	Date	The date when the data associated with the corporate action was last updated.
13	Effective Date	Date	The date when the corporate action takes effect.
14	Corporate Action Data	Text (1000)	Semi-colon delimited sequence of name-value pairs (e.g. <field name>=<value>) specific to the Corporate Action Type (detailed below).
15	Issue Notes	Text (1000)	Free-form text field containing information about the corporate action that is not reflected in one of the other fields.
16	Old Name	Text (255)	The name of the company prior to the change.
17	New Name	Text (255)	The name of the company after the change.
18	Listing Reason	Text (80)	The reason the issue will be listed by Bats. Allowed values: • New Listing • Transfer from NYSE • Transfer from NYSE Amex • Transfer from NYSE ARCA • Transfer from CBOE • Transfer from NCM

Col	Field Name	Type	Description
			• Transfer from NGM • Transfer from NGS • Transfer from NASDAQ • Other • Regulatory/Non-Compliance • Removed from Listing & Registration
19	Test Symbol	Boolean	Indicates whether or not the issue is a test symbol.
20	Round Lot Quantity	Unsigned	Integer indicating the number of shares that define a round lot.
21	Market Category	Text (15)	The Market Category of a security. Allowed values: • Tier 1 • Tier 2
22	Delisting Reason	Text (80)	The reason the issue will no longer be listed by Bats. Allowed values: • Acquisition/Merger • Added to OTCBB • Added to other OTC • ADR Program Termination • Called for Redemption • Company Choice/Corporate Reorganization Pending • Company Choice/Regulatory Matter Pending • Corporate Reorganization (already effective) • Expiration • Form 15 • Liquidation • Transfer to NYSE • Transfer to NYSE Amex • Transfer to NYSE ARCA • Transfer to CBOE • Transfer to NCM • Transfer to NGM • Transfer to NGS • Transfer to NASDAQ • Other • Regulatory/Non-Compliance • Removed from Listing & Registration
23	Old Symbol	Symbol	The symbol (ticker) of the issue prior to the change.
24	New Symbol	Symbol	The symbol (ticker) of the issue after to the change.

C.3. NYSE Specification

The NYSE Group Corporate Actions product is comprised of several reports and provides information for equities listed on the NYSE, NYSE MKT and NYSE Arca market centers, including, but not limited to, new listings (for example IPOs, spin-offs and structured product listings), corporate actions, cash dividends, proxy related matters, and so forth.

NYSE will submit all reports using one single file type, with the base filename `NYSEDaily`. Each report will be submitted in CSV format, where the first column designates the type of that record. Each record type may have different numbers of columns, but each record of the same type must have all columns in the definition for that record type.

Data types and formats are consistent with all other CAT reporting data types.

C.3.1. NYSE Corporate Actions

The NYSE corporate actions and group ex-date corporate actions will be submitted with a record of this type.

Table 97: Corporate Actions Record Fields

Col	Field Name	Type	Description
1	type	Message Type	NDCA
2	DividendID	Unsigned	Corporate action identification number which uniquely identifies each corporate action. This allows data recipients to determine changes made to already declared corporate actions.
3	symbol	Symbol	NYSE Group listed security symbol in [symbol]_[symbol suffix]_[symbol class] format where " " is a space.
4	companyName	Text (255)	Indicates Companies Registered name
5	IssueName	Text (255)	Name of NYSE Group listed security
6	OutstandingShares	Unsigned	Shares outstanding for the given security on the day the corporate action was declared or changed
7	Frequency	Text (100)	Payment frequency for the given security (for dividends)
8	ExDate	Date	The date on or after which a security is traded without a previously declared dividend or distribution
9	DeclaredDate	Date	Date on which the corporate action was declared
10	ConfirmationDate	Date	Date on which the declared corporate action was confirmed by listed company and the NYSE Group

Col	Field Name	Type	Description
11	PayDate	Date	Date on which corporate action distribution will be paid or effective.
12	RecordDate	Date	This is the date on which all shareholders are considered a "holder of record" and ensured the right of a dividend or distribution.
13	UpdatedDate	Date	Date which corporate action was last updated or changed.
14	CAType	Text (100)	Corporate Action Type. Cash Dividend (Cash), Stock Dividend (Stock), Stock Split (Stock Split), Stock Distribution (Stock Distribution)
15	DividendAmount	Price	Amount of Dividend (if corporate action type = cash)
16	DividendCurrency	Text (100)	Currency Dividend is being paid in (if CA Type = Cash)
17	Distribution	Price	Amount of cash or stock being paid in the case of a distribution or stock dividend.
18	RatioTo	Numeric (10,8)	For stock splits the amount of stock being exchanged for the amount in the 'Ratio For' column.
19	RatioFor	Numeric (10,8)	For Stock Splits the amount of stock being distributed in exchange for the 'Ratio To' amount
20	FinalAmount	Price	Final Amount being paid after all adjustments have been made (Currency Fluctuations, Valuations and so forth)
21	FinalAmountCurrency	Text (100)	Currency of the Final Amount Payment
22	RemoveFlag	Boolean	Remove Flag set to yes when an already declared corporate action has been removed or canceled.
23	CancellationReason	Text (255)	Reason for cancellation (if applicable)
24	CanceledDate	Date	Date of Corporate Action cancellation (if applicable)
25	MiscNotes	Text (300)	Description and/or Explanation field used to explain unique features or conditions of the corporate action.
26	Market	Text (255)	"NYSE" "NYSE MKT" "NYSE Arca"
27	ForeignPrivateIssuerFlag	Boolean	Indicates if the issuer is a non-US Private entity
28	NormalAmount	Price	Indicates the payment to shareholders when the underlying security is liquidated subject to long term holding
29	LongTermCapitalGains	Price	Indicates the payment to shareholders when the underlying security is liquidated subject to long term holding
30	ShortTermCapitalGains	Price	Indicates the payment to shareholders when the underlying security is liquidated subject to short term

Col	Field Name	Type	Description
			holding
31	ReturnOfCapital	Price	Indicates payment received from an investment that is not taxed as income.
32	SpecialPrice	Price	Is a one-time distribution of corporate earnings to company shareholders
33	OtherPrice	Price	Other non-standard distribution

C.4. FINRA Daily Specification

FINRA will submit all data of these types using a single file type, similar to all other file submissions, with the base filename FINRADaily. The file will contain any or all record types listed in this section, and shall be submitted in CSV format. Note that each record type is identified by a type field. The FHR records corresponding to FINRA Halt/Resume should be contained in these FINRADaily submissions.

C.4.1. FINRA Corporate Actions

The layout of the FINRA Corporate Action.

Table 98: FINRA OTC Corporate Action

Field Name	Type	Description	Include Key
type	Message Type	FODCA	R
DAILY_LIST_TS	Timestamp	Daily List Date/Time: YYYYMMDDHHMMSS	R
DAILY_LIST_EVENT_CD	Choice	Daily List Event Type; valid values: SA - Security Addition SC - Security Change SD - Security Deletion DA - Dividend Addition DC - Dividend Change DD - Dividend Deletion/Cancellation	R
OLD_SYM_CD	Symbol	Old Symbol	R
NEW_SYM_CD	Symbol	New Symbol	O
OLD_CUSIP_ID	Alphanumeric(9)	Old CUSIP	R
NEW_CUSIP_ID	Alphanumeric(9)	New CUSIP	O
OLD_SCRTY_DS	Text(250)	Old Security Description	R

Field Name	Type	Description	Include Key
NEW_SCRTY_DS	Text(250)	New Security Description	O
OLD_FNNCL_STTS_CD	Text(1)	Old Financial Status Indicator	O
NEW_FNNCL_STTS_CD	Text(1)	New Financial Status Indicator	O
OLD_OATS_RPTBL_FL	Choice	Valid values are Y, N	R
NEW_OATS_RPTBL_FL	Choice	Valid values are Y, N, null	O
OLD_RND_LOT_QT	Unsigned	Old Unit of Trade	R
NEW_RND_LOT_QT	Unsigned	New Unit of Trade	O
OLD_CLASS_TX	Text(2)	Old Class/Series of Security	O
NEW_CLASS_TX	Text(2)	New Class/Series of Security	O
OLD_ADR_ORDNY_SHARE_RT	Text(15)	Old ADR to Ordinary Share Ratio (:#:#)	O
NEW_ADR_ORDNY_SHARE_RT	Text(15)	New ADR to Ordinary Share Ratio (:#:#)	O
OLD_REG_FEE_FL	Choice	Valid values are Y, N	R
NEW_REG_FEE_FL	Choice	Valid values are Y, N, null	O
OLD_MTRTY_XPRTN_DT	Timestamp	Old Maturity/Expiration Date: YYYYMMDDHHMMSS	O
NEW_MTRTY_XPRTN_DT	Timestamp	New Maturity/Expiration Date: YYYYMMDDHHMMSS	O
OLD_MKT_CTGRY_CD	Choice	Old Market Category; valid values: U = OTCBB; u = Other OTC	R
NEW_MKT_CTGRY_CD	Choice	New Market Category; valid values: U = OTCBB; u = Other OTC, null	O
OFRNG_TYPE_CD	Choice	Offering Type; valid values: A = 144A S = Reg S B = 144A and Reg S N = No Restrictions I = Accredited Investors	R
SUBJ_CRPRT_ACTN_CD	Choice	Subject to Corporate Action; valid values: CA = Corp Action without a distribution CD = Corp Action with a distribution null	O
DCLRN_DT	Timestamp	Declaration Date: YYYYMMDDHHMMSS	O
PYMNT_DT	Timestamp	Payment Date: YYYYMMDDHHMMSS	O

Field Name	Type	Description	Include Key
EX_DT	Timestamp	Ex/Effective Date: YYYYMMDDHHMMSS	O
REC_DT	Timestamp	Record Date: YYYYMMDDHHMMSS	O
FRWRD_SPLIT_RT	Text(10)	Forward Split Ratio (:#)	O
RVRS_SPLIT_RT	Text(10)	Reverse Split Share Ratio (:#)	O
STOCK_PT	Numeric(6,6)	Stock percentage	O
CASH_AMT_TX	Text(25)	Cash Amount	O
PYMNT_MTHD_CD	Choice	Payment Method; valid values: PUS = Payable Upon Surrender MOD = Mailed Out Direct null	O
ADR_FEE_AM	Numeric(6,6)	ADR Dividend Fee	O
ADR_TAX_RLF_AM	Numeric(6,6)	ADR Tax Relief Fee	O
ADR_GROSS_RT	Numeric(11,7)	ADR Gross Rate	O
ADR_NET_RT	Numeric(11,7)	ADR Net Rate	O
ADR_ISSNC_FEE_AM	Numeric(6,6)	ADR Issuance Fee	O
ADR_WHLDG_TAX_PT	Numeric(6,6)	ADR Withholding Tax	O
QLFD_CD	Choice	Qualified Dividend Code; valid values: Y, N, U (unknown), null	O
DAILY_LIST_RSN_CD	Choice	Daily List Reason Code; valid values on Daily List Reason Codes table	R
CMMNT_TX	Text(500)	Comments	O
DVDND_MSTR_ID	Unsigned	Record ID	O

The following table contains the valid choices for the field DAILY_LIST_RSN_CD.

Table 99: Daily List Reason Codes

Code	Reason
12J	12(j) Registration Revoked by SEC
ADD	Addition
AMM	Acquisition/Merger/Amalgamation
BCD	Bankruptcy Case Dismissed
BCSHD	Bankruptcy Cash Distribution

Code	Reason
BPESC	Bankruptcy Plan Effective/Shares Canceled
BSD	Bankruptcy Plan Effective/Shares Canceled/Distribution
BSTKD	Bankruptcy Stock Distribution
CALLD	Called
CCD	Charter Canceled/Dissolution
CDR	Cash Dividend Regular
CDRS	Cash Dividend Regular and Special
CDS	Cash Dividend Special
CNVRC	Conversion/Reclassification
CSDR	Cash and/or Stock Dividend Regular
CSDRS	Cash and/or Stock Dividend Regular and Special
CSDS	Cash and/or Stock Dividend Special
CSPCD	CUSIP Change
CSPSP	CUSIP Suspended
DCSHD	Default Interest (Cash) Distribution
DSTKD	Default Stock Distribution
EFB	Emerged From Bankruptcy
F6530	Failure to Comply with FINRA Rule 6530
FS	Forward Split
FSCCD	Forward Split/CUSIP Change
FSCE	Financial Status Change Delinquent = E
FSCJ	Financial Status Change Bankrupt and Delinquent = J
FSCL	Financial Status Change Liquidation = L
FSCLD	Financial Status Change Liquidation and Delinquent = H
FSCQ	Financial Status Change Bankruptcy = Q
IN	Ineligible
LFD	Liquidation/Final Distribution
MATCD	Maturity Date Change
MATEX	Matured/Expired
MCFBB	Market Center Change Moving from Bulletin Board
MCTBB	Market Center Change Moving to Bulletin Board

Code	Reason
MCDBT	Market Center Change Delisted from BATS
MCDCE	Market Center Change Delisted from CBOE
MCDAX	Market Center Change Delisted from AMEX
MCDAR	Market Center Change Delisted from ARCA
MCDNQ	Market Center Change Delisted from NASDAQ
MCDNY	Market Center Change Delisted from NYSE
MCLBT	Market Center Change Listed on BATS
MCLCE	Market Center Change Listed on CBOE
MCLAX	Market Center Change Listed on AMEX
MCLAR	Market Center Change Listed on ARCA
MCLNQ	Market Center Change Listed on NASDAQ
MCLNY	Market Center Change Listed on NYSE
MCFOT	Market Center Change Moved from OTCE
MCFTR	Market Center Change Moved from TRACE
MCTOT	Market Center Change Moved to OTCE
MCTTR	Market Center Change Moved to TRACE
MCSPM	Market Center Change to Sub Product Move
NACTV	Inactive Security
NMCCD	Name/CUSIP Change
NMCHG	Name Change
NMSMC	Name/Symbol/CUSIP Change
NMSYM	Name/Symbol Change
NQT	Ineligible for Quotation on OTCBB due to Quoting Inactivity under SEC Rule 15c-211
O	Other
PRVTN	Company Going Private
RDMPT	Redemption
RNDUP	Round Lot Size Update
RSFS	Reverse Split followed by Forward Split
RSCCD	Reverse Split/CUSIP Change
RSFFS	Reverse Split followed by Forward Split/CUSIP Change
RSTMT	Reinstatement

Code	Reason
SDPAS	Stock Dividend Payable in Another Security
SDR	Stock Dividend Regular
SDRS	Stock Dividend Regular and Special
SDS	Stock Dividend Special
SO	Spin-Off
SCAFR	Subject to Corporate Action Flag Removal
SCTUN	Sponsored to Un-sponsored Conversion
SYMCD	Symbol Change
TERMD	ADR/GDR Program Terminated
TO	Tender Offer
F1534	Terminated Registration under 34 Act
UNTSC	Un-sponsored to Sponsored Conversion
US	Unit Separation
XCHG	Exchanged
XR	Ex Rights
XTRDH	Extended Trading Halt
XW	Ex Warrants
MCDIX	Market Center Change Delisted from IEX
MCLIX	Market Center Change Listed from IEX

Appendix D. FINRA Trade Reporting Facility (TRF) Fields

These message types go into the `FinraTransactions` file kind.

Table 100: FINRA Trade Reporting Facility (TRF) Fields

Field Name	Type	Description	Include Key
type	MessageType	FTRF	R
Market Center ID	Choice	Identifies the FINRA Facility where the trade was reported. Values: D = ADF L = Nasdaq-TRF Carteret N = NYX-TRF O = OTC Reporting Facility C = Nasdaq-TRF Chicago	R
Trade Report Date	Date	Date that the trade was reported to the TRF.	R
Trade Report Timestamp	Timestamp	The date and time that the trade was reported to the TRF.	R
Execution Price	Price	Unit price of the trade	R
Execution Quantity	Unsigned	Number of shares traded	R
Execution Date	Date	Date when the execution occurred	R
Execution Timestamp	Timestamp	Time when the execution occurred	R
Issue Symbol ID	Symbol	Character symbol of the traded issue	R
Rptng Side Execution MPID	Member Alias	Reporting side MPID of the executing party of the trade	R
Reported Side Code	Choice	Indicates whether the reporting side of the trade is the buy side or the sell side. Values: **B** =Buy Side **S** =Sell Side **X** =Crossed Trade	R
Rptng Side Short Sale Code	Choice	Code used to identify a short sale by the executing firm and indicate the type of short. Values:	O

Field Name	Type	Description	Include Key
		SS = Short sale **SX** = Short sale exempt **_null_** = not a short sale	
Rptng Side Capacity Code	Choice	Capacity (principal,agent,riskless) of the reporting-side firm. Values: **P** =Principal **A** =Agency **R** =Riskless Principal	O
Rptng Side Branch Seq Number	Text(20)	Branch/sequence number of the reporting-side firm.	O
Rptng Side Clearing Number	Unsigned	Clearing number of the firm that cleared the trade for the reporting-side firm	R
Rptng Side Memo Text	Text(10)	Provides a link (Control Number) to the original trade report, when a subsequent report is submitted to reallocate some of the trade volume to a different capacity. Note: this is a free-form text field; participants can enter any information in this field.	O
Contra Executing MPID	Member Alias	MPID of the contra-side executing party	O
Contra Side MPID	Member Alias	MPID of the contra-side firm that reported the trade	O
Contra Short Code	Choice	Code used to identify a short sale by the contra firm and indicate the type of short. Values: **SS** = Short sale **SX** = Short sale exempt **_null_** = not a short sale	O
Contra Capacity Code	Choice	Capacity (principal,agent,riskless) of the contra-side firm. Values: **P** =Principal **A** =Agency **R** =Riskless Principal	O
Contra Branch Seq ID	Text(20)	Branch/sequence number of the contra-side firm. Used to link to the Broker/Dealer report.	O
Contra Clearing Number	Unsigned	Clearing number of the firm that cleared the trade for the contra-side firm	O

Field Name	Type	Description	Include Key
Contra Entry Flag	Choice	Denotes whether the contra party is the only side that reported the trade. Values: **O** = Contra Entry **_null_** = not applicable	O
Contra Execution Timestamp	Timestamp	The time the contra party reported that the execution took place.	O
Contra Party Trade Report Timestamp	Timestamp	The date and time that the contra party reported the trade to the TRF.	O
Report Type Code	Choice	Identifies whether this is a No/Was Report. Values: **_null_** = Regular **N** = No **W** = Was	O
Reported Unit Price	Price	Unit price of the trade as reported to the SIP	O
Reported Share Quantity	Unsigned	Number of shares traded as reported to the SIP	O
Trade Status	Choice	Trade status code. Values: **A** = Accepted by Contra side **B** = Broken by both sides **C** = Canceled by Reporting side **D** = Declined by Contra side **E** = Errored **F** = Forced Matched; locked-in trade **G** = One-sided Submission (Intermarket Trade) **H** = Hanging trade (not available real-time) **I** = Inhibited (by clearing firm) **K** = Rejected sizable trade **L** = Transaction Locked-in and submitted to clearing due to no action on contra side (i.e., hanging trades that are locked-in next day, not available real-time) **M** = AGU automatic locked-in trade **N** = No portion of no/was trade **R** = QSR automatic locked-in trade	R

Field Name	Type	Description	Include Key
		T = Trade report submitted by reporting side **X** = As-Of open or As-Of spilt trade which is not forwarded to NSCC, but is available for query.	
Trade Settlement Date	Date	Date on which the trade will settle (alternatively, could provide the number of days the settlement is delayed)	C
Media Report Flag	Choice	Identifies whether the trade was media reported or not (could differ from the Publish Indicator for odd lot trades). Values: **N** = Not media reported **Y** = media reported	R
Trade Settlement Modifier 1	Choice	Identifies a Reg NMS Settlement Type Sale Condition Code associated with a trade transaction. Values: @ = Regular settlement C = Cash settlement N = Next day settlement R = Seller settlement	R
Trade Through Exemption Modifier 2	Choice	This identifier identifies the classification of the trade with regard to Trade Through Exemption. This modifier is entered by the firm when it reports the trade. Values: **2** = NASD Self Help Indicator **3** = Intermarket Sweep – Outbound **4** = Derivatively Price **5** = Market Center Reopen **6** = Market Center Closing **7** = Error Correction **8** = Print Protection **9** = Corrected Consolidated close price as per listing market **F** = Intermarket Sweep **J** = NASD Subpenny Indicator **O** = Market Center Open. **V** = NASD Contingent Indicator **_blank_** = No exemption	O

Field Name	Type	Description	Include Key
Trade Rptng Modifier 3	Choice	This identifier is a further classification of a trade with regard to Extended Hours/Sequence. This modifier can either be entered by the firm when it reports the trade or appended by the system. Values: Null = Not extended or sequence L = Sold last (late reported) T = Pre- or post-market trade U = Pre- or post-market trade reported out of sequence (late) Z = Sold out of sequence (late)	O
SRO Required Modifier 4	Choice	This identifier is a further classification of a trade with regard to SRO Required Detail. This modifier can either be entered by the firm or appended by the system. Values: **A** = Acquisition **D** = Distribution **E** = Automatic execution (system) **H** = Intraday trade detail (system) **I** = Odd lot **K** = Rule 155 Amex/Rule 127 NYSE **M** = Market Center close price (system) **P** = Prior reference price **Q** = Market center open price (system) **R** = Away from market sale **S** = Split trade **V** = Contingent trade **W** = Average price trade **X** = Exercise of OTC option **1** = Stop stock (regular trade) **_blank_** = No unusual trade detail	O
Firm Trade Modifier Late Code	Choice	User Trade Modifier - Extended Hours/Sequence. Values: Null = Not extended or sequence L = Sold last (late reported) T = Pre- or post-market trade	O

Field Name	Type	Description	Include Key
		U = Pre- or post-market trade reported out of sequence (late) Z = Sold out of sequence (late)	
Firm Trade Modifier Settlement Type Code	Choice	User Trade Modifier – Settlement Type (Settlement modifiers). Values: **@** = Regular settlement **C** = Cash settlement **N** = Next day settlement **R** = Seller settlement	R
Firm Trade Modifier SRO Code	Choice	User Trade Modifier – SRO – Updated by TRF. SRO detail sale condition. Required indicator if a trade falls under one of the following transaction types (otherwise the field must not be set): **_null_** = No unusual trade detail **E** = Automatic execution (system) **H** = Intraday trade detail (system) ** ** = Odd lot **M** = Market Center close price (system) **P** = Prior reference price **Q** = Market center open price (system) **K** = Rule 155 Amex/Rule 127 NYSE **A** = Acquisition **D** = Distribution **S** = Split trade **W** = Average price trade **1** = Stop stock (regular trade) **R** = Away from market sale **X** = Exercise of OTC option	O
Trade Modifier SRO Time	Time	Time associated with Prior Reference Price or Stopped Stock trade.	O
Firm Trade Modifier Through Exempt Code	Choice	This identifier identifies the classification of the trade with regard to Firm's Trade Through Exemption. This modifier is entered by the firm when it reports the trade. Values: **2** = NASD Self Help Indicator **3** = Intermarket Sweep Outbound **4** = Derivatively Price	O

Field Name	Type	Description	Include Key
		5 = Market Center Reopen **6** = Market Center Closing **7** = Error Correction **8** = Print Protection **9** = Corrected Consolidated close price as per listing market **F** = Intermarket Sweep **J** = NASD Subpenny Indicator **O** = Market Center Open **V** = NASD Contingent Indicator **_blank_** = No exemption	
Trade Modifier Through Exempt Time	Time	Time associated with Outbound ISO modifier.	O
Last Update Date	Date	Last update date for the record	R
Last Update Time	Time	Last update time for the record	O
Contra Party Accept Timestamp	Timestamp	Date and Time associated with the contra acceptance of the trade. This occurs when the contra side submits a Trade Report Accept message.	O
Trade Break Timestamp	Timestamp	The time the reporting party submitted their break request	O
Trade Broken Timestamp	Timestamp	The time the contra party submitted their break confirmation	O
Decline Timestamp	Timestamp	Timestamp the trade was declined by the contra party	O
Cancellation Timestamp	Timestamp	Time the reporting party canceled the trade	O
Trade Through Exempt Flag	Choice	Flag to identify trades that are trade through exempt. Values: **N** = No trade through exemption **Y** = Trade through exemption	O
Carryover Flag	Choice	Denotes whether the trade transaction was carried over (not accepted/declined by the contra firm on T+0) for processing. Values: **C** = carryover **_null_** = not a carryover	O
Reversal Flag	Choice	Denotes whether the trade report is reversal transaction.	R

Field Name	Type	Description	Include Key
		Values: **Y** = Reversal **N** = Not a reversal	
Clearing Price	Price	The trade price inclusive of commissions. This information is only currently available for reported trades to the Nasdaq TRF.	O
Position Transfer Flag	Choice	Special Processing Flag. Indicates that the transaction is for internal FINRA use only and should not be disseminated. Values: **3** - Section 3 Fees **P** - Position Transfer **A** - Audit Trail Only **N** - none	O
Special Trade Code	Choice	Identifies special and step-out trades: Values: S = a "Step Out" trade Null = not a special or step out trade <i>The following codes are only applicable to Nasdaq-TRF and ORF trades:</i> F = Fee transfer, occurred on Nasdaq O = Fee transfer, occurred on another market X = a "special and Step-out trade" and instructs the NSCC not to include the trade in CNS Y = a "special trade" and instructs the NSCC not to include the trade in CNS settlement. Q = Stepout of Nasdaq Exchange trade I = Step In trade J = Special and Step In trade A = Step Out trade with Section 3 Fee B = Special and Step Out trade with Section 3 Fee	O
As of Flag	Choice	Indicates as-of trade. Values: **Y** =trade reported as-of **N** =trade reported on execution date	R

Field Name	Type	Description	Include Key
Publish Indicator Code	Choice	Identifies whether the trade is media reportable or not (could differ from the Media Reported Flag for odd lot trades). Values: N = Not Media Report Eligible Y = Media Report Eligible	R
Clearing Flag	Choice	Denotes the clearing and matching specifications of the trade transaction. Values: **C** = Customer (No matching, no clearing) **Q** = QSR (No matching, no clear) **S** = Self clearing (No matching, no clearing) **G** = Automatic Give Up (Auto lock-in & Clearing) **_null_** – Trade intended for matching & clearing **Y** = Clearing **N** = 'No Clearing **A** = NASDAQ AGU for clearing **R** = Risk update only, not sent to clearing **U** = AGU Clearing, non-risk eligible **ACT only:** **L** = Do not match, send to clearing (locked-in) received via external system interface only **Z** = Do not match, send to clearing (locked-in)	O
Related Market Center ID	Choice	For the non-tape "riskless" leg of a riskless principal transaction, identifies the facility or market where the first leg of the transaction was reported. Values: **0** = ADF/ORF **1** = NQ TRF **3** = NYSE TRF **A** = AMEX trade **B** = BSE trade **C** = NSX trade **F** = Foreign Mkt **G** = BATS Y Exch trade **H** = BATS Exch trade **]** = ISE trade	O

Field Name	Type	Description	Include Key
		J = DirectEdge A Ex trade **K** = DirectEdge X Ex trade **M** = Chgo Stock Exch trade **N** = NYSE trade **O** = unknown mkt ctr **P** = PSE trade **Q** = NQ Exchange Trade for NQ securities **U** = unspecified mult mkt trades **V** = Investors' Exchange LLC (IEX)) **W** = CBOE trade **X** = Phil Stock Exch trade **S** = MIAX PEARL Equities **_blank_** = No Related Market Center	
First Trade FINRA Control Number	Text(30)		O
Previous Trade FINRA Control Number	Text(30)		O
OE Memo Text	Text(10)	Memo text entered by firm.	O
Price Override Code	Choice	An indicator that identifies if a price validation test was overridden when the trade was entered into ACT. (When trades are entered into ACT, they are validated for reasonableness against a Price Validation Table. The Price Override widens the validation range). Values: **O** = Subscriber Override.* **X** = Supervisory Override. **V** = Supervisory Contract Override. **_blank_** = No override. <i>*(default) Value set by the ACT System for all CQS Issues if not "X" or "V"</i>	O
Supervisory Entry Code	Choice	Indicates if a Market Operations Supervisor entered the trade message on behalf of the reporting side of the trade transaction: Values: D = Supervisory entry for Service Desk participant S = Supervisory entry for non-Service Desk	O

Field Name	Type	Description	Include Key
		participant Null = not a supervisory entry	
Explicit Fee Flag	Choice	Denotes whether a Clearing Price was entered. Values: **Null** = Not Explicit Fee Trade **Y** = Explicit Fee Trade	O
Control Number	Text(30)	A unique identifier for the reporting side of each trade transaction.	R
Contra Control Number	Text(30)	Control number for contra side trade report	O
Trade Reference Number	Text(20)	Trade Reference Number used to discretely tie a Media eligible trade to one or more non-Media eligible trades. E.g., same ref number used on a Media trade and on a Riskless Principal trade (FIX Tag #527)	O
Reference Number	Text(20)	User defined trade reference number.	O
TRF Control Number	Text(30)	Control number used for interaction between Firms and TRFs; May not be unique for a given day	O
TRF Contra Control Number	Text(30)	Control number used for interaction between TRF and Firms; Contra side will only be populated when trade is matched by comparison; May not be unique for a given day	O
TRF Original Control Number	Text(30)	For reversal transactions, contains the Control Number of the original trade being reversed.	O
TRF Trade Modifier Late Code	Choice	System Trade Modifier – Time Modifiers - Updated by TRF Values: T = Executed outside normal market hours Z = Executed during normal market hours and reported late U = Executed outside normal market hours and reported late NULL	O
TRF Trade Modifier SRO Code	Choice	System Trade Modifier – SRO – Updated by TRF. SRO detail sale condition. Required indicator if a trade falls under one of the following transaction types (otherwise the field must not be set): Values: V = Contingent trade W = Weighted Average Price	O

Field Name	Type	Description	Include Key
		I = Odd Lot Trade	
FINRA Trade Modifier Late Code	Choice	System Trade Modifier – Time Modifier – Updated by MPP Engine Values: T = Executed outside normal market hours Z = Executed during normal market hours and reported late U = Executed outside normal market hours and reported late NULL	O
FINRA Trade Modifier SRO Code	Choice	System Trade Modifier SRO – Updated by MPP System Values: W = Weighted Average Price for trade disseminated to UTP SIP B = Weighted Average Price for trade disseminated to CTA SIP I = Odd Lot Trade V = Contingent Trade P = Prior Reference Price	O
Reported Side MPID	Member Alias	MPID of the firm with the reporting obligation for the trade	R
Unique Record Identifier	Text(31)	Unique identifier for each Reported Trade record.	R
Reserved		Reserved for future use	
Reserved		Reserved for future use	
Reserved		Reserved for future use	
Reserved		Reserved for future use	
Reserved		Reserved for future use	

Appendix E. Market Move Scenarios

This appendix provides guidance on how some common scenarios where a listed symbol can move from one listing participant to another should be handled.

E.1. Common Scenarios

These are common scenarios, with well established procedures.

E.1.1. OTC to Exchange

Security ABCD trades OTC on 7/27/2017. Security moves to Exchange A on 7/28/2017 and is assigned new symbol WXY.

FINRA: On 7/27/2017, submit update record for ABCD, to change end date to 20170727. This explicit delisting step is the preferred method of operation. However, a transfer can still occur without it.

EXCHANGE A: Anytime before 7/28/2017, Exchange A will submit transfer request to change:

- Listing Participant to Exchange A
- Issue Type to NMS
- Symbol to WXY

Some time after the market closes on 7/27/2017, and before 2:00AM on 7/28/2017, a scheduled job will automatically run within the CAT system to transfer the symbol to EXCHANGE A. If the symbol is still owned (i.e., the endDate overlaps the new effectiveDate), then endDate will be set to the date the transfer job runs, so that it is released before being transferred. This job will then change the beginDate for the new owner to be the same as the effectiveDate in the transfer request, and will change the endDate for the new owner to 99991231.

Trades in symbol WXY that occur on 7/28/2017 should be accepted. If the Exchange adds WXY, rather than submitting a transfer, the link between the two symbols will not exist – so the move should be handled with an update, rather than an add.

E.1.2. Exchange to OTC

Security ABC trades on Exchange A on 7/27/2017. Security is delisted effective 7/28/2017 and will trade over-the-counter as ABCF.

EXCHANGE A: On 7/27/2017, submit update record for ABC, to change end date to 20170727. This explicit delisting step is the preferred method of operation. However, a transfer can still occur without it.

FINRA: Anytime before 7/28/2017, FINRA will submit update record to change:

- Listing Participant to FINRA
- Issue Type to OTC
- Symbol to ABCF

Some time after the market closes on 7/27/2017, and before 2:00AM on 7/28/2017, a scheduled job will automatically run within the CAT system to transfer the symbol to FINRA. If the symbol is still owned (i.e., the endDate overlaps the new effectiveDate), then endDate will be set to the date the transfer job runs, so that it is released before being transferred. This job will then change the beginDate for the new owner to be the same as the effectiveDate in the transfer request, and will change the endDate for the new owner to 99991231.

Trades in symbol ABCF that occur on 7/28/2017 should be accepted. If FINRA adds ABCF, rather than submitting a transfer, the link between the two symbols will not exist – so the move should be handled with an update, rather than an add.

E.1.3. Exchange to Exchange

The process is the same as the two examples above, with FINRA being replaced by the other listing exchange.

E.2. Other Scenarios

These scenarios require further discussion to determine the best procedure.

E.2.1. No Definitive Destination

Security is delisting from exchange, but FINRA does not have definitive indication that security will trade OTC.

An Exchange delists a symbol, but FINRA doesn't plan to add the symbol to OTC immediately, as we're not sure what the issuer plans to do (company may be defunct, for example). No trades are received in the symbol after delisting.

A delisting should submit an Update Symbol Entry record to CAT, delisting the symbol by changing the endDate to the last day that the symbol was listed for that participant. This ensures that the symbol is not listed at all. If/when the symbol is re-listed, a transfer request is submitted by the new listing participant (FINRA). This may result in some number of days where the symbol is not listed. If any events are received for that symbol during that timeframe, those events will be rejected for having an invalid symbol.

E.2.2. Trades OTC While Suspended

Security is suspended by the exchange, and trades over the counter while suspended

Nasdaq may put a security in the “suspended” state prior to formally delisting it. While suspended, it can be added to the OTC master and actively trade for up to 30 days before the exchange ultimately deletes it or the issuer successfully appeals and the security resumes being listed.

The exchange should update the endDate for when the security is suspended by submitting an Update Symbol Entry record. If FINRA picks it up for trading, then FINRA can submit a transfer request to transfer the security to FINRA. If the exchange ultimately does not de-list the security, the exchange can submit a transfer request to transfer the security back to themselves.

E.2.3. Move from OTC to Exchange with Symbol and CUSIP Change

Security is moving from OTC to an exchange, and simultaneously undergoing a symbol and CUSIP change

When FINRA knows the symbol is listing, it will process the OTC delete and once the new symbol is known, send an update with the new symbol and exchange information. We do not always know the new symbol until it has actually listed, however – so that security update record will come after the listing occurs.

This should follow Scenario A. The exchange will provide the transfer request to move the security with the correct symbol, and, if practical, FINRA will explicitly release the symbol beforehand.

E.2.4. Move to OTC Postponed by Exchange

The exchange tells FINRA a security will be listing on the next day, so FINRA processes the OTC end date and updates the security to the exchange – and then the listing is postponed by the exchange.

FINRA receives an Add from the exchange on their overnight file, and FINRA relinquishes the security as a result. The exchange notifies FINRA manually the next morning that the listing has been postponed. In the event that FINRA has already sent the end date for the security and relinquished it, and now needs to retract that, what should we do?

FINRA can submit another update to change the OTC end date back to 99991231 so that the system can continue to accept OTC trades for the security.

E.2.5. Move to OTC Intraday

FINRA finds out intraday that a symbol is delisting and needs to be added to OTC.

Occasionally, FINRA needs to add a symbol intraday when it delists. If that security has already been trading under the prior symbol, in most cases, FINRA will not change the symbol/add the security until the next day. But there are rare cases where the symbol needs to be moved and changed intraday. How will that scenario be handled?

This scenario needs further thought/discussion. While not frequent, there are cases where a security may be exchange listed at the start of the day and firms may submit orders, and then after market open, the issuer files for bankruptcy/merges, etc and the symbol is moved to OTC and begins trading there. In this case, the system needs to accommodate the security having the same End Date on the exchange as its Begin Date on OTC.

E.2.6. Temporary Deactivation

OTC issues can become inactive due to lack of trading or other activity, and can subsequently begin trading again and be re-activated as a result. When FINRA end-dates a security and it subsequently needs to be re-activated, should we submit an update record to provide a new Begin Date and End Date for the new period of trading?

As long as no one has used that symbol in the interim, FINRA should just submit an update to the symbol to change the end date to 99991231 when the symbol begins trading OTC again.

E.2.7. Trading Outside Listing Dates

Trading in securities prior to symbol start date or as-of reporting after the symbol end date.

In the OTC space, a security may trade before a firm requests a symbol for the security. When FINRA receives the symbol request and enters the security, the begin date for that security is the date it is set up. However, firms can enter as-of trades in that symbol with execution dates before the begin date. The report date of the trade has to be on or after the start date of the security, but the execution date does not.

After an OTC security has been inactivated, a firm can still submit as-of trades on that security with execution dates prior to the inactivation date. In that case, execution date will be the key field, since it will be before the inactivation date of the security, but the report date will be after.

This scenario needs further thought/discussion.

E.2.8. As-of Trades in Delisted Symbols

As-of trades in delisted exchange symbols

An exchange delists security ABC, and it begins trading over the counter as ABCF. A firm has trading activity in ABC that it should have reported prior to the delisting. Because symbol ABC has delisted, the exchange will no longer accept trades in that symbol, so the firm must report the trades to ORF as-of, under symbol ABCF – but the execution date of the trades will be before the Start Date of the OTC symbol.

This scenario needs further thought/discussion.

Appendix F. Data Dictionary

Each variable presented in this technical specification is defined below in terms of variable description, related events/reference data, data type, and allowed values.

Table 101: Data Dictionary

Field Name	Data Type	Description
askPrice	Price	Events: Quote Event The price being asked for the option in a quote.
askQty	Unsigned	Events: Quote Event The quantity being asked for the option in a quote.
attributes	Symbol Entry Pairs	Reference Data: Symbol Entry A Name Value Pairs field, containing attributes associated with a symbol that are meaningful, but may not be permanent. For example, the tick pilot group is meaningful now, but may not be so in the near future. In addition, there may be other "pilots" that may require additional information for symbols. This field is a Symbol Entry Pair data type, and allowed values for this field must be defined in the data dictionary entry for Symbol Entry Pairs.
awayExchange	Exchange ID	Events: Self Help Declaration Exchange ID of the exchange affected by the self-help event.
beginDate	Date	Reference Data: Symbol Entry The effective date of the symbol - the first date on which a symbol is an active listing.
bidPrice	Price	Events: Quote Event The price being bid for the option (can be zero in two-sided quote) in a quote event.
bidQty	Unsigned	Events: Quote Event The quantity being bid for the option (can be zero in two-sided quote) in a quote event.
buyDetails	Side Trade Details	Events: Order Trade Event, Trade Correction Event, Option Trade Event, Options Trade Correction Event Object in a trade event that contains information for the buy side of the trade. Format and element definitions for Buy Details are described in Trade Side Details. For side trade details for equities, please refer to section 4.5. For side trade details for options, please refer to section 5.2.5.1.
cancelQty	Unsigned	Events: Order Canceled Event, Options Order Canceled Event The quantity being canceled in Order Cancel Event and Options Order Canceled 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	Events: Order Canceled Event, Quote Cancel Event, Options Order Canceled Event Expresses the cancellation reason for a quote or order with one of the below accepted values. Additional values may be added by request. Allowed Values IOC Immediately canceled EXP Expired

Field Name	Data Type	Description
		REQ Explicit request to cancel the order DIS Session disconnected ALL Market Maker Canceled All Quotes Allowed Values: Cboe Legacy (C1) Only <i>active 3/29/2019 - 10/4/2019</i> NOTHING_DONE USER SYSTEM LOST_CONNECTION INSUFFICIENT_QUANTITY SPECIAL_ADJUSTMENT QRM_REMOVED INSUFFICIENT_QUANTITY_BUY_SIDE INSUFFICIENT_QUANTITY_SELL_SIDE WASH_TRADE_PREVENTION QUOTE_UPDATE_CONTROL FAILOVER QUOTE_IN_TRIGGER INVALID_SESSION_ID SAL_IN_PROGRESS CROSS_IN_PROGRESS INVALID_NBBO NOT_WITHIN_NBBO TRADE_THROUGH_CBOE INSUFFICIENT_CUSTOMER_ORDER_QUANTITY INSUFFICIENT_CROSS_ORDER_SIZE INSUFFICIENT_CROSS_ORDER_DOLLAR_AMOUNT SELL_SHORT_RULE_VIOLATION CANCEL_ON_RSS CALL_BID_EXCEEDS_UNDERLYING_PRICE PUT_BID_EXCEEDS_STRIKE_PRICE LIMIT/EXECUTION_PRICE_WOULD_BE_DEBIT LIMIT/EXECUTION_PRICE_EXCEEDS_MAX_VALUE NO_USER_ACTIVITY BROKER_OPTION CANCEL_PENDING CROWD_TRADE DUPLICATE_ORDER EXCHANGE_CLOSED GATE_VIOLATION INVALID_ACCOUNT INVALID_AUTOEX_VALUE INVALID_CMTA INVALID_FIRM INVALID_ORIGIN_TYPE INVALID_POSITION_EFFECT

Field Name	Data Type	Description
		INVALID_PRICE INVALID_PRODUCT INVALID_PRODUCT_TYPE INVALID_QUANTITY INVALID_SIDE INVALID_SUBACCOUNT INVALID_TIME_IN_FORCE INVALID_USER LATE_PRINT NOT_FIRM MISSING_EXEC_INFO NO_MATCHING_ORDER NON_BLOCK_TRADE NOT_NBBO COMM_DELAYS ORIGINAL_ORDER_REJECTED OTHER PROCESSING_PROBLEMS PRODUCT_HALTED PRODUCT_IN_ROTATION STALE_EXECUTION STALE_ORDER ORDER_TOO_LATE TRADE_BUSTED TRADE_REJECTED ORDER_TIMEOUT REJECTED_LINKAGE_TRADE SATISFACTION_ORD_REJ_OTHER UNKNOWN_ORDER INVALID_EXCHANGE TRANSACTION_FAILED NOT_ACCEPTED SUSPENDED AWAY_EXCHANGE_CANCEL LINKAGE_CONDITIONAL_FIELD_MISSING LINKAGE_EXCHANGE_UNAVAILABLE LINKAGE_INVALID_MESSAGE LINKAGE_INVALID_DESTINATION LINKAGE_INVALID_PRODUCT LINKAGE_SESSION_REJECT Allowed Values: Cboe Admin Admin CloseOnly Options only - attempt to open a position when a series is in a "close only" status Consent Both parties agreed to break trade DefaultRiskNotSet Options only - risk configuration is incomplete

Field Name	Data Type	Description
		Duplicate Duplicate Erroneous Clearly erroneous Expired GTC orders FailedToQuote Could not reflect on SUMO NoGlobalLiquidity Ran out of liquidity to execute against Halted Halted IncorrectDataCenter Tried to send order to DR site TooLate Too late to cancel OrderRateThreshold Exceeded order rate threshold LockOrCross Order would lock or cross NBBO MaxSizeExceeded Exceeded client specific maximum order size NoLiquidity Ran out of liquidity to execute against OrderUnknown Supplied order id doesn't match a known order Pending Can't modify an order that is routed away WaitingForTape Waiting for first trade before allowing executions RouteUnavailable Route unavailable QuoteUnavailable Quote unavailable Short short price violation TradeThrough order would have caused a trade-through violation User user requested WouldWash Execution would Wash Trade WouldRemove AddLiquidityOnly order would have removed liquidity Symbol symbol not supported Other unforeseen reason BulkOrder Cancel due to BulkOrder (BOE) OrdersDisallowed order entry disallowed MassCancelSingleAck mass cancel with single ack option RiskMgmtFirmLevel Risk Management Trigger Hit at "Firm" Level NoOddLotIPOs On IPO day opening print must be at least as large as a round lot - No odd lots MarketAccessLimit (US) Market Access Risk limit exceeded in router MaxOpenOrdersExceeded exceeded maximum open orders permitted MismatchedRemainder remainder on incoming request does not match remainder in our system Reload restatement for reserve reload RiskMgmtSymbolLevel Risk Management Trigger Hit at "Symbol/OSI" Level RiskMgmtGroupLevel Risk Management Trigger Hit at "Group" Level LimitUpDown LU/LD (e.g., tried to rest through the LU/LD bands) WouldRemoveUnSlide AddLiquidityOnly order tried to unslide but would have resulted in removing liquidity MarketCrossed Crossed Market Protection InReplay message received during replay Persist GTC order done for today (will get restated)

Field Name	Data Type	Description
		next trading day) SessionEnd canceled automatically at end of regular or extended trading session based on customer send coding ClearingFailure Trade Failed to Clear GroupLevelRiskManagement Risk Management Trigger Hit at "Group" Level Allowed Values: BOX TraderCanceled Eliminated EliminatedOutOfLimits EliminatedDueToUnpricedLeg CanceledBySupervisor CancelPending EliminatedByCircuitBreaker EliminatedOnDisconnection EliminatedByMarketControl EliminatedDueToTradingRestriction EliminatedDueToTradeLimitExceeded EliminatedDueToTradeActivityLimitExceeded EliminatedDueToMaximumNbTriggersLimitExceeded EliminatedDueToDrillThroughProtection EliminatedDueToMMPProtection Allowed Values: MEMX 0 Other - This order was canceled for some other reason not listed. 1 UserRequestedCancel - The client sent a OrderCancelRequest or OrderMassCancelRequest for this order 4 EndOfTrading - The order was sent with the DAY time in force set, and the DAY trading session completed. 5 LimitUpLimitDown - The price of the order fell outside market LULD bands, and the re-pricing modifier was not specified on the order. 6 Halted - The market on the order's security was halted. 7 ExchangeSupervisory - Operational or supervisory actions taken by MEMX resulted in the cancellation of this order. 8 OrderExpired - The order was sent with an expiration time and had the "good for time" time in force set, and the supplied expiration time passed. 9 LockOrCrossBook - The order was not externally routable, and market conditions would have resulted in this order crossing or locking the order book 10 SelfTradePrevention - This or another associated order's specified self trade prevention behavior triggered the cancellation of this order. 11 InsufficientQuotes - The order was cancelled because there are insufficient quotes on the book for the symbol. 12 NonCompliantPrice - The order was cancelled because the price in the order was non-compliant. 13 ParticipantDisconnect - The participant directed that their orders should be canceled when the trading system detects a disconnection, and the participant disconnected. 14 OrderNotBookable – The Order is not of bookable type (this may include market orders, IOC, FOK, etc)

Field Name	Data Type	Description
		15 TradeProtectionLimits - The price of the order fell outside market trade protection limits rule, and the re- pricing modifier was not specified on the order. 16 UnableToRoute – The order was canceled because it was externally routable but could not be routed. 17 FirmDisabled – The order was cancelled because the firm was disabled. 18 MPIDDisabled – The order was cancelled because the MPID was disabled. 19 AccountDisabled – The order was cancelled because the Account was disabled. 20 NotionalExposureRiskBreached – The order was cancelled because a Notional Exposure Risk Rule was breached.
		Allowed Values: MIAX
		MIAMI_0004 UserCanceled MIAMI_0005 HelpDeskCanceled MIAMI_0006 WdCanceled MIAMI_0007 CrossSameMpidCanceled MIAMI_0009 OversizedAuctionCanceled MIAMI_0010 ReintroduceCanceled MIAMI_0018 TimeInForceCanceled MIAMI_0019 NonTradeableCanceled MIAMI_0020 CanceledOnClosing MIAMI_0021 ProductHalted MIAMI_0022 UserPurged MIAMI_0023 MpidDeleted MIAMI_0024 MpidPermissionDeleted MIAMI_0025 RiskPurged MIAMI_0026 SystemPurged MIAMI_0027 InternalPurged MIAMI_0029 GtcSpinCanceled MIAMI_0030 LuldCanceled MIAMI_0031 RpmBlockedMpidCanceled MIAMI_0032 ComplexTradingSuspendedForCloudCanceled MIAMI_0033 ComplexFeatureDisabledForUnderlyingCanceled MIAMI_0034 ComplexStrategyNonTradeableCanceled MIAMI_0035 ComplexStrategyLegWithWideMbboCanceled MIAMI_0036 ComplexStrategyLegWithPrimeAuctionCanceled MIAMI_0037 ComplexStrategyLegWithRouteTimerCanceled MIAMI_0038 ComplexStrategyLegWithLiqRefreshTimerCanceled MIAMI_0039 ComplexIneligiblePriceCanceled MIAMI_0040 ComplexStrategyAuctionInProgressCanceled MIAMI_0041 ComplexOrderExhaustedDcMbboAfterEndOfComplexTimeCanceled MIAMI_0042 ComplexStrategyPreOpenCanceled MIAMI_0045 ComplexCollarPriceProtectionCanceled MIAMI_0046 DerivedOrderFeatureDisableCanceled MIAMI_0047 DerivedOrderStrategyNotFreeTradingCanceled

Field Name	Data Type	Description
		MIAMI_0048 DerivedOrderStrategyTopChangeCanceled MIAMI_0049 DerivedOrderStrategyTopLockCanceled MIAMI_0050 DerivedOrderReplaceCanceled MIAMI_0051 DerivedOrderWorseSameSideMbboCanceled MIAMI_0052 DerivedOrderLeanMbboWorseAbboCanceled MIAMI_0053 DerivedOrderLeanMbboChangeCanceled MIAMI_0054 DerivedOrderComponentNotFreeTradingCanceled MIAMI_0055 DerivedOrderWideMarketCanceled MIAMI_0056 DerivedOrderSystemIssueCanceled MIAMI_0057 DerivedOrderTraded MIAMI_0058 SspCanceled
		Allowed Values: MIAX Pearl
		PEARL_0004 UserCanceled PEARL_0005 HelpDeskCanceled PEARL_0007 CrossSameMpidCanceled PEARL_0012 RoutedToAwayMarket PEARL_0018 TimeInForceCanceled PEARL_0019 NonTradeableCanceled PEARL_0021 ProductHalted PEARL_0029 GtcSpinCanceled PEARL_0030 LuldCanceled PEARL_0031 RpmBlockedMpidCanceled PEARL_0032 PriceProtectionCanceled PEARL_0033 UserPurged PEARL_0034 SystemPurged PEARL_0035 PostOnlyLockingManagedCanceled PEARL_0036 IrpAssigned PEARL_0037 SspCanceled
		Allowed Values: MIAX PEARL Equities
		PEARLEQ_0001 UserMeo PEARLEQ_0002 UserFoi PEARLEQ_0003 UserPurgePort PEARLEQ_0004 HelpDesk PEARLEQ_0005 MFP PEARLEQ_0006 ACOD PEARLEQ_0007 ACOSF PEARLEQ_0008 CRM PEARLEQ_0009 OrderExpired PEARLEQ_0010 PostOnlyCancelSymbolNotTrading PEARLEQ_0011 ACOCR PEARLEQ_0100 SelfTradeProtection PEARLEQ_0101 TimeInForce PEARLEQ_0102 PostOnlyLockingCrossingMbbo PEARLEQ_0103 TradingCollarProtection PEARLEQ_0104 RePriceFrequencyNoPriceSliding

Field Name	Data Type	Description
		PEARLEQ_0105 RePriceFrequencyOnce PEARLEQ_0106 RePriceFrequencyOnceButCancelIfCrossedAtEntry PEARLEQ_0107 IsoSellShortRegShoLockCrossNbbo PEARLEQ_0108 LimitOrderPriceProtection Allowed Values: MIAX Emerald EMLD_0004 UserCanceled EMLD_0005 HelpDeskCanceled EMLD_0006 WdCanceled EMLD_0007 CrossSameMpidCanceled EMLD_0009 OversizedAuctionCanceled EMLD_0010 ReintroduceCanceled EMLD_0018 TimeInForceCanceled EMLD_0019 NonTradeableCanceled EMLD_0020 CanceledOnClosing EMLD_0021 ProductHalted EMLD_0022 UserPurged EMLD_0023 MpidDeleted EMLD_0024 MpidPermissionDeleted EMLD_0025 RiskPurged EMLD_0026 SystemPurged EMLD_0027 InternalPurged EMLD_0029 GtcSpinCanceled EMLD_0030 LuldCanceled EMLD_0031 RpmBlockedMpidCanceled EMLD_0032 ComplexTradingSuspendedForCloudCanceled EMLD_0033 ComplexFeatureDisabledForUnderlyingCanceled EMLD_0034 ComplexStrategyNonTradableCanceled EMLD_0035 ComplexStrategyLegWithWideMbboCanceled EMLD_0036 ComplexStrategyLegWithPrimeAuctionCanceled EMLD_0039 ComplexIneligiblePriceCanceled EMLD_0040 ComplexStrategyAuctionInProgressCanceled EMLD_0041 ComplexOrderExhaustedDcMbboAfterEndOfComplexTimeCanceled EMLD_0042 ComplexStrategyPreOpenCanceled EMLD_0045 ComplexCollarPriceProtectionCanceled EMLD_0046 DerivedOrderFeatureDisableCanceled EMLD_0047 DerivedOrderStrategyNotFreeTradingCanceled EMLD_0048 DerivedOrderStrategyTopChangeCanceled EMLD_0049 DerivedOrderStrategyTopLockCanceled EMLD_0050 DerivedOrderReplaceCanceled EMLD_0051 DerivedOrderWorseSameSideMbboCanceled EMLD_0052 DerivedOrderLeanMbboWorseAbboCanceled EMLD_0053 DerivedOrderLeanMbboChangeCanceled EMLD_0054 DerivedOrderComponentNotFreeTradingCanceled EMLD_0055 DerivedOrderWideMarketCanceled EMLD_0056 DerivedOrderSystemIssueCanceled EMLD_0057 DerivedOrderTraded

Field Name	Data Type	Description
		EMLD_0058 SspCanceled
		EMLD_0059 ComplexStrategyLegWithLiqExposureTimerCanceled
		EMLD_0060 PostOnlyLockingManagedCanceled
		Allowed Values: CHX
		A001_02A New SNAP Order Reject - Order Terms are not valid for SNAP
		A001_02B New SNAP Order Reject - Invalid market condition
		A001_07 Cancel Order, SNAP auction end
		A001_11 SNAP Auction - Cancel of Satisfy/Route Order
		A001_13 SNAP Auction - Reject of Satisfy/Route Order
		A001_15 Cancel Order on SNAP Auction - Resting
		U400_01 order reject-invalid content
		U400_04 order reject-invalid trading session
		U400_05 order reject-invalid market state
		U400_06 order reject-invalid market conditions
		U400_07 order message cannot be parsed
		U400_08 order from PMM not is registered stock
		U400_09 order from PMM did not include position
		U400_10 order from PMM with position/side discrepancy
		U400_11 IOC Order Reject-No PM LS
		U400_14 Market IOC orders not allowed during extended sessions
		U400_17 New AOO reject
		U415_01 ME DAS Order Cancel on Restart
		U430_01 satisfy cross reject-not regular-way settlement
		U430_02 satisfy cross reject-short sale test failure
		U430_03 satisfy cross reject-NBBO trade through
		U430_04 satisfy cross reject-insufficient satisfy volume available
		U430_05 satisfy cross reject-outside crossed NBBO
		U430_06 satisfy cross reject-crossed market
		U431_01 yield cross reject-not regular-way settlement
		U431_02 yield cross reject-short sale test failure
		U431_03 yield cross reject-NBBO trade through
		U431_04 yield cross reject-unwilling to yield appropriate side
		U431_05 yield cross reject-outside crossed NBBO
		U431_06 yield cross reject-crossed market
		U432_01 cross reject-too late for cash settlement
		U432_02 cross reject-short sale test failure
		U432_03 cross reject-NBBO trade through
		U432_04 cross reject-outside crossed NBBO
		U432_05 cross reject-crossed market
		U432_06 cross reject-CHX trade through
		U432_07 cross reject-CHX lock-insufficient size out
		U432_09 Cross Reject - Price is outside the band
		U432_10 For cross order rejected price at trade-at
		U433_01 order reject-outside crossed market NBBO
		U433_02 order reject-crossed market

Field Name	Data Type	Description
		U433_03 order cancel-unable to display remaining volume U433_04 FOK/IOC Cancel-No Match Opportunity U436_01 midpoint cross reject-market crossed U436_02 midpoint cross reject-market halted U437_01 order cancel-TIF expired U441_01A reject incoming order-NBBO trade through U441_01B cancel resting undisplayed order-NBBO trade through U441_02 Post Only Cancel U441_03 Quote Only U441_05 order was canceled because received reject message from away market U441_06 SSH Violation U441_07 New incoming order get canceled because of order's limit price cross price band (reserved, un-displayed order) U441_08 Resting order get canceled because of order's limit price cross price band (reserved, un-displayed order) U441_09 Order was canceled because of stale order. U450_01 cancel order activity U450_03 cancel reject-order not found U451_01 cancel change reject-market halted U451_02 cancel change-cancel original order U451_06 cancel change reject-order not open U451_08 cancel change reject-order not found U451_11 Reject cancel replace to MKT of DAY order U480_02 order canceled on halt U482_02 close time expiration-cancel order activity U482_05 manual close-cancel order activity U482_06 Order gets canceled because of trading pause. U485_05 Manual Open-Cancel Opening Crosses U485_06 Primary Quote Open-Cancel Opening Crosses U490_02 open timer expiration-cancel opening cross order activity U491_02 firm disconnect-cancel order activity U495_01 ME DAS Order Cancel on Disconnect U496_01 ME DAS Order Cancel on DAS Instruction U497_01 Manual Unsolicited Order Cancel U498_01 Unsolicited cancel because of MTP Cancel Incoming (N) U498_02 Unsolicited cancel because of MTP Cancel Resting (O) U498_03 Unsolicited cancel of the incoming order because of MTP Cancel Both (B) U498_04 Unsolicited cancel of the resting order because of MTP Cancel Both (B) U499_01 Unsolicited Cancel or Reject because Kill Switch Flag is ON U499_02 Unsolicited cancel because of Kill Switch Cancel Request U900_03 ME receives an Order Cancel from ORS U900_05 ME receives an Order Reject from ORS U900_06 ME receives an internal Order Reject from ORS

Field Name	Data Type	Description
		Allowed Values: IEX
		AdminCancel Order was administratively canceled
		ExceededMaxSnapshots Cancel sent by router when orders are not filled within time constraint
		IexOrderCollar Order cannot be executed outside of collar boundaries
		InvalidBookPrice Order cannot be validly priced
		InvalidOrderQty Invalid quantity for market maker peg order
		OrderExceedsLimit Order canceled because of constraints on IEX router
		OrderSizeLessThanMinQty Order with Minimum Quantity can no longer be satisfied
		RouterConstraint Routable Order cannot be routed outside of collar boundaries
		SelfTradePrevention Order Canceled by SelfTradePrevention
		UnmatchedIneligibleToRest Unmatched order, ineligible to rest on IEX
		Allowed Values: Nasdaq - PHLX, NOM, NOBO
		1 AUTOPURGE
		2 POD
		3 FIRM
		4 REASSIGN
		5 HALT
		6 AIQ
		7 MANUPURGE
		8 OPENPURGE
		9 REPRICE
		10 SUSPEND
		11 LIQUIDITY TAKER
		12 RAPID FIRE VOL
		13 ZAP DELETE
		14 KILLSWITCH AUTO
		15 KILLSWITCH CMD LINE
		16 KILLSWITCH TRADEINFO
		17 notPermitted
		18 badStopPrice
		19 systemClosed
		20 invalidDisplay
		21 invalidType
		22 invalidFirm
		23 invalidClearing
		24 halt
		25 invalidTime
		26 invalidCross
		27 invalidMpid
		28 invalidMinSize
		29 alreadyOpened
		30 restrictedSymbol

Field Name	Data Type	Description
		31 closeCross
		32 invalidSymbol
		33 testmode
		34 invalidPrice
		35 tiedToStockNotAllowed
		36 invalidSize
		37 limitTooDeep
		38 featureNotSupported
		39 systemError
		40 invalidAttribute
		41 suspend
		42 notFreeTrading
		43 nbboTooWide
		44 changeContractsNoOrder
		45 changeContractsInvalid
		46 reentry
		47 killswitch_reentry
		48 postOnlyReprice
		49 undLULD
		50 invalidPreOpenloc
		51 userCancel
		52 ioc
		53 timeout
		54 unsolicitedOutReentry
		55 routeRequest
		56 staleOrder
		57 sppLimit
		58 auctionInProgress
		59 engineCancel
		60 tooLateToAct
		61 noAuction
		62 invalidTIF
		63 aonNotAllowed
		64 bboCross
		65 purge
		66 orderExpired
		67 aiq
		68 cnbboLimit
		69 noBbo
		70 mktOrder
		71 treasuryOptionsNotAllowed
		72 openingCancel
		73 executionNotPossible
		74 badCapacity
		75 optionNotOpen
		76 openDelay
		77 liquidityTaker

Field Name	Data Type	Description
		78 killSwitch 79 adminCancel 80 systemCancel 81 brokerOption 82 invalidCrossSurrender 83 cod 84 eodCancel OTHER Other
		Allowed Values: Nasdaq – NOBO <i>in addition to values defined above</i>
		1017 KILLSWITCH USER 1018 notPermitted 1019 InvalidStopPrice 1020 systemClosed 1021 invalidDisplay 1022 invalidType 1023 invalidFirm 1024 invalidClearing 1025 halt 1026 invalidTime 1027 invalidCross 1028 invalidMpid 1029 invalidMinSize 1030 alreadyOpened 1031 restrictedSymbol 1032 closeCross 1033 invalidSymbol 1034 testmode 1035 invalidPrice 1036 tiedToStockNotAllowed 1037 invalidSize 1038 limitTooDeep 1039 featureNotSupported 1040 systemError 1041 invalidAttribute 1042 suspend 1043 notFreeTrading 1044 nbboTooWide 1045 changeContractsNoOrder 1046 changeContractsInvalid 1047 reentry

Field Name	Data Type	Description
		1048 killswitchReentry
		1049 postOnlyReprice
		1050 undLULD
		1051 invalidPreOpenloc
		1052 userCancel
		1053 ioc
		1054 timeout
		1055 unsolicitedOutReentry
		1056 routeRequest
		1057 staleOrder
		1058 sppLimit
		1059 auctionInProgress
		1060 engineCancel
		1061 tooLateToAct
		1062 noAuction
		1063 invalidTIF
		1064 aonNotAllowed
		1065 bboCross
		1066 purge
		1067 orderExpired
		1068 aiq
		1069 cnbboLimit
		1070 noBbo
		1071 mktOrder
		1072 treasuryOptionNotAllowed
		1073 openingCancel
		1074 executionNotPossible
		1075 invalidCapacity
		1076 optionNotOpen
		1077 openDelay
		1078 liquidityTaker
		1079 killswitchPurge
		1080 adminCancel
		1081 systemCancel
		1082 brokerOption
		1083 invalidSide
		1084 invalidSpread
		1085 invalidAuctionType
		1086 invalidFormat
		1087 frozen

Field Name	Data Type	Description
		1088 requestPending
		1089 cancelUp
		1090 cancelDown
		1091 postOnlyTaker
		1092 invalidState
		1093 tooManyAuctions
		1094 invalidAuctionParams
		1095 rejectedReplace
		1096 massCancel
		1097 invalidReprice
		1098 price
		1099 size
		1100 nbboLimit
		1101 impliedExec
		1102 tooManyImplies
		1103 complexInstrExists
		1104 exceededMaxComplexInstr
		1105 firmExceededMaxComplexInstr
		1106 invalidPtaContracts
		1107 invalidMatchId
		1108 invalidTradeId
		1109 invalidCrossId
		1110 invalidClientId
		1111 dnttNotAllowed
		1112 instrumentClosed
		1113 atrLimitReached
		1114 invalidISO
		1115 invalidStepupPrice
		1116 threeTickLimitReached
		1117 pending
		1118 pennyNbboRestriction
		1119 invalidDntt
		1120 invalidInstrType
		1121 invalidOrderType
		1122 invalidALO
		1123 invalidFlashInst
		1124 invalidPrefParty
		1125 invalidReserveInfo
		1126 invalidPersist
		1127 invalidShortSaleInd

Field Name	Data Type	Description
		1128 invalidProduct 1129 invalidScope 1130 invalidOpenClose 1131 invalidToken 1132 invalidKillAction 1133 invalidLegCount 1134 invalidLegType 1135 invalidLegRatio 1136 invalidCrossType 1137 prefNotAllowed 1138 orderNotFound 1139 actionNotAllowed 1140 instrumentState 1141 qccNotAllowed 1142 qccWithStockNetPriceNotAllowed 1143 qccWithMultiOptLegNotAllowed 1144 invalidDestination 1145 maxRoutesAttempted 1146 destinationNotAvailable 1147 minQtyNotSatisfied 1148 sorRespTimeout 1149 invalidAllocSplits 1150 qccWithStockPriceNotAllowed 1151 tooManyStockTradeAttempts 1152 notTob 1153 cod 1154 poolExhausted 1155 eodCancel
		Allowed Values: Nasdaq - ISE, GEMINI, Mercury Options
		1 AUTOPURGE 2 POD 3 FIRM 4 REASSIGN 5 HALT 6 AIQ 7 MANUPURGE 8 OPENPURGE 9 REPRICE 10 SUSPEND 11 LIQUIDITY TAKER 12 RAPID FIRE VOL 13 ZAP DELETE

Field Name	Data Type	Description
		14 KILLSWITCH AUTO
		15 KILLSWITCH CMD LINE
		16 KILLSWITCH TRADEINFO
		17 KILLSWITCH USER
		18 notPermitted
		19 invalidStopPrice
		20 systemClosed
		21 invalidDisplay
		22 invalidType
		23 invalidFirm
		24 invalidClearing
		25 halt
		26 invalidTime
		27 invalidCross
		28 invalidMpid
		29 invalidMinSize
		30 alreadyOpened
		31 restrictedSymbol
		32 closeCross
		33 invalidSymbol
		34 testmode
		35 invalidPrice
		36 tiedToStockNotAllowed
		37 invalidSize
		38 limitTooDeep
		39 featureNotSupported
		40 systemError
		41 invalidAttribute
		42 suspend
		43 notFreeTrading
		44 nbboTooWide
		45 changeContractsNoOrder
		46 changeContractsInvalid
		47 reentry
		48 killswitchReentry
		49 postOnlyReprice
		50 undLULD
		51 invalidPreOpenloc
		52 userCancel
		53 ioc
		54 timeout
		55 unsolicitedOutReentry
		56 routeRequest
		57 staleOrder
		58 sppLimit
		59 auctionInProgress
		60 engineCancel

Field Name	Data Type	Description
		61 tooLateToAct
		62 noAuction
		63 invalidTIF
		64 aonNotAllowed
		65 bboCross
		66 purge
		67 orderExpired
		68 aiq
		69 cnbboLimit
		70 noBbo
		71 mktOrder
		72 treasuryOptionNotAllowed
		73 openingCancel
		74 executionNotPossible
		75 invalidCapacity
		76 optionNotOpen
		77 openDelay
		78 liquidityTaker
		79 killswitchPurge
		80 adminCancel
		81 systemCancel
		82 brokerOption
		83 invalidSide
		84 invalidSpread
		85 invalidAuctionType
		86 invalidFormat
		87 frozen
		88 requestPending
		89 cancelUp
		90 cancelDown
		91 postOnlyTaker
		92 invalidState
		93 tooManyAuctions
		94 invalidAuctionParams
		95 rejectedReplace
		96 massCancel
		97 invalidReprice
		98 price
		99 size
		100 nbboLimit
		101 impliedExec
		102 tooManyImplieds
		103 complexInstrExists
		104 exceededMaxComplexInstr
		105 firmExceededMaxComplexInstr
		106 invalidPtaContracts
		107 invalidMatchId

Field Name	Data Type	Description
		108 invalidTradeId
		109 invalidCrossId
		110 invalidClientId
		111 dnntNotAllowed
		112 instrumentClosed
		113 atrLimitReached
		114 invalidISO
		115 invalidStepupPrice
		116 threeTickLimitReached
		117 pending
		118 pennyNbboRestriction
		119 invalidDnnt
		120 invalidInstrType
		121 invalidOrderType
		122 invalidALO
		123 invalidFlashInst
		124 invalidPrefParty
		125 invalidReserveInfo
		126 invalidPersist
		127 invalidShortSaleInd
		128 invalidProduct
		129 invalidScope
		130 invalidOpenClose
		131 invalidToken
		132 invalidKillAction
		133 invalidLegCount
		134 invalidLegType
		135 invalidLegRatio
		136 invalidCrossType
		137 prefNotAllowed
		138 orderNotFound
		139 actionNotAllowed
		140 instrumentState
		141 qccNotAllowed
		142 qccWithStockNetPriceNotAllowed
		143 qccWithMultiOptLegNotAllowed
		144 invalidDestination
		145 maxRoutesAttempted
		146 destinationNotAvailable
		147 minQtyNotSatisfied
		148 sorRespTimeout
		149 invalidAllocSplits
		150 qccWithStockPriceNotAllowed
		151 tooManyStockTradeAttempts
		152 notTob
		153 cod
		154 poolExhausted

Field Name	Data Type	Description
		155 eodCancel OTHER OTHER Allowed Values: Nasdaq Equities – NSDQ, PSX, BX 1 User requested cancel. Sent in response to a Cancel Order Message or a Replace Order Message 2 Immediate or Cancel order. 3 Timeout. The Time In Force for this order has expired 4 Supervisory. 5 This order cannot be executed because of a regulatory restriction 6 Self-Match Prevention. 7 System cancel. 8 Cross-canceled. Non-bookable cross orders that did not execute in the cross. 9 Order canceled due to insufficient quantity 10 This order cannot be executed because of Market Collars 11 Halted. The on-open order was canceled because the symbol remained halted after the opening cross-completed. 13 Closed. Any DAY order that was received after the closing cross is complete in a given symbol will receive this cancel reason. 15 Administrative cancel 16 Post Only Cancel. This Post Only order was canceled because it would have been price slid for NMS. 17 Post Only Cancel. This Post Only order was canceled because it would have been price slid due to a contra side displayed order on the book ADMIN for an administrative cancel FEATURE in the service of a customer-requested feature
capacity	Choice	Events: Order Accepted Event, Order Route Event, Order Modified Event, Order Trade Event, Order Fill Event, Order Modify Route Event, Order Restatement Event Specifies the capacity of a given order or side of a trade. Allowed Values Agency Principal RisklessPrincipal
clearingFirm	Text (10)	Events: Stock Leg Order Event, Stock Leg Fill Event The Member Alias of the clearing firm.
clearingNumber	Text (20)	Events: Order Trade Event, Order Fill Event, Stock Leg Fill Event DTCC clearing number reported for each side of a stock trade or for the reporting side of a fill event.
cmtaFirm	Alphanumeric(8)	Events: Simple Option Order Accepted Event, Option Order Modified Event, Option Trade Event, Post Trade Allocation Event, Options Order Restatement Event The OCC number of the CMTA firm (only valid for CMTA trades).

Field Name	Data Type	Description
companyName	Text (255)	Reference Data: Symbol Entry The Name of the Company in free format text.
complexOptionID	Text (40)	Events: Simple Option Order Accepted Event, Option Order Adjusted Event, Stock Leg Order Event, Option Order Modified Event, Stock Leg Modified Event, Option Route Event When present in an event, the complexOptionD will contain the same value as the optionID field from the Complex Order Accepted event to which this event is associated.
complexOrderID	Text (40)	Events: Simple Option Order Accepted Event, Option Order Adjusted Event, Stock Leg Order Event, Option Order Modified Event, Stock Leg Modified Event, Option Route Event When present in an event, the complexOrderID identifies the complex option order that is the parent order for an leg orders. Note that this will be the same value as the orderID field from the Complex Order Accepted event.
contraClearingNumber	Unsigned	Events: Order Fill Event DTCC clearing number for contra side of a trade.
coverage	Choice	Events: Simple Option Order Accepted Event, Option Order Modified Event, Option Route Event, Modify Option Route Event, Options Order Restatement Event Specifies whether an option order is covered or uncovered. Field may also be filled in as unspecified. Allowed Values Covered Uncovered Unspecified
declaredTimestamp	Timestamp	Events: Self Help Declaration Date and time self-help was declared.
definedMMDEData	Name/Value Pairs	Events: Equity Market Maker A list of key/value pairs, providing machine parseable exchange specific regulatory context data for the Equity Market Maker.
definedNoteData	Name/Value Pairs	Events: Note Event A list of key/value pairs, providing machine parseable data for the notation. The attributes must be defined in this specification. Allowed Values: Cboe Legacy (C1) Only <i>active 3/29/2019 - 10/4/2019</i> SubNoteType Requires a Choice value (e.g SubNoteType=XXX) where XXX must be one of the following choices. SELECTED PAR Order Select Time and NBBO at the time RECEIVED PAR Order Received Time and NBBO at the time TRADED PAR Order Trade Time and NBBO at the time REPRESENT PAR Order represent time and NBBO at the time UID A unique number assigned by the originating system to identify the row in SBT_ORDER_HIST. The value must be Unsigned (e.g. UID=12345). RemQty Quantity remaining after the fill. The value must be Unsigned (e.g., RemQty=700).

Field Name	Data Type	Description
		RouteSrc The source of the route as a text field (Text<40>) of workstation name, PAR broker, etc (e.g., RouteSrc=ABC123). RouteDest The destination of the route as a text field (Text<40>) of workstation name, PAR broker, etc (e.g., RouteSrc=ABC123). RouteSrcType The location type where the order is routed from. The value is one of the following integer values (e.g., RouteSrcType=3): 0 Unspecified 1 CMI 3 TE 4 PAR 5 BOOTH_OMT 6 CROWD_OMT 7 HELP_DESK_OMT 8 OHS 9 LINKAGE 10 DISPLAY 11 Broker Dealer (Stock orders derived from CPS Cross) 12 Broker Dealer (Stock Orders derived from CPS Market Order Split) RouteDestType The location type where the order is routed to. The value is one of the same as described in RouteSrcType. RouteRes Indicates the reason for the route. The value is one of the integer values (e.g., RouteRes=7) from the following list: 1 VOLUME_CHECK 2 AUTO_EXECUTION 3 DIRECT_ROUTE 4 ALTERNATE_ROUTE 5 DISCRETIONARY_OR_NH_ORDER 6 ALL_ROUTING_ATTEMPT_FAILED For reroute attempts: 7 HAL_REROUTING 8 REROUTING_TO_SENDER 9 REROUTING_TO_DEFAULT_OMT 10 LINKAGE_ROUTE For PAR print requests: 11 PAR_PRINT_ORDER_INTRA_DAY 12 PAR_PRINT_ORDER_END_OF_DAY 13 PAR_PRINT_CANCEL 14 PAR_PRINT_CANCEL_REPLACE For PAR order reroute TA and TB: 15 MANUAL_REROUTE_ORDER_TA 16 MANUAL_REROUTE_ORDER_TB 17 MANUAL_REROUTE_ORDER_BOOK

Field Name	Data Type	Description
		18 MANUAL_REROUTE_ORDER_AUCTION 19 CANCEL_FOLLOW_ORDER For PAR order and fill timeouts: 20 MANUAL_ORDER_TIMEOUT 21 MANUAL_ORDER_FILL_TIMEOUT 22 CABINET_ORDER 23 SIMPLE_FILL_REJECT 24 COMPLEX_FILL_REJECT 25 CANCEL_REQUEST_ON_RSS 26 NBBO_REJECT 27 TRADE_NOTIFICATION_BUNDLE_TIMEOUT 28 TRADE_NOTIFICATION_ACK_TIMEOUT 29 TRADE_NOTIFICATION_REJECT 30 FILL_REPORT_DROP_COPY 31 CANCEL_REPORT_DROP_COPY 32 PREMIUM_EXCEEDS_REASONABILITY 33 VOLUME_DEVIATION_CHECK_FAILED_ALL_LEVELS 34 VOLUME_DEVIATION_CHECK_PASSED_LEVEL_1 35 VOLUME_DEVIATION_CHECK_PASSED_LEVEL_2 36 VOLUME_DEVIATION_CHECK_PASSED_LEVEL_3 37 CANCEL_REQUEST_ON_FALLBACK 38 TOO_MANY_ROUTES 39 PRODUCT_STATE_ROUTE 40 VOLUME_MAINTENANCE_MISMATCH 41 FORCED_LOGOFF_PAR 42 MANUAL_REROUTE_ORDER_SR 46 MANUAL_REROUTE_ORDER_FR 302 LINKAGE_STALE_EXECUTION
		BBOBP BBO bid price; the value is of type Price. BBOBS BBO bid size; the value is of type Unsigned. BBOAP BBO ask price; the value is of type Price. BBOAS BBO ask size; the value is of type Unsigned. NBBOBP NBBO bid price; the value is of type Price. NBBOBV NBBO bid exchange volume; the value is of type Unsigned. NBBOAP NBBO ask price; the value is of type Price. NBBOAV NBBO ask exchange volume; the value is of type Unsigned. DSMBP Derived Spread Market bid price; the value is of type Price DSMBS Derived Spread Market bid size; the value is of type Unsigned DSMAP Derived Spread Market ask price; the value is of type Price DSMAS Derived Spread Market: The (Integer) BBP Book bid price; the value is of type Price. BBS Book bid size; the value is of type Unsigned.

Field Name	Data Type	Description
		BAP Book ask price; he value is of type Price. BAS Book ask size; the value is of type Unsigned. AuctionType The type of auction; the value is one of the following integers 0 Auction Unspecified 1 AUCTION_INTERNALIZATION (AIM/Complex AIM) 2 AUCTION_STRATEGY 3 AUCTION_REGULAR_SINGLE 4 AUCTION_HAL 5 AUCTION_SAL 8 AUCTION_DAIM (for Directed AIM) -4 AUCTION_HALO -8 AUCTION_NEW_HAL AucTradeQty auction trade quantity; the value will be Unsigned AucEarlyTerm indicates if an auction ended early; the value is Boolean (true or false) AuctionID Optional field of type UNSIGNED ActTime The actual time at which activity happened on PAR or ME; the value will be Timestamp Allowed Values: Cboe Options <i>active 10/7/2019 – present</i> BBOBP BBO bid price; the value is of type Price. BBOBS BBO bid size; the value is of type Unsigned. BBOAP BBO ask price; the value is of type Price. BBOAS BBO ask size; the value is of type Unsigned. NBBOBP NBBO bid price; the value is of type Price. NBBOBV NBBO bid exchange volume; the value is of type Unsigned. NBBOAP NBBO ask price; the value is of type Price. NBBOAV NBBO ask exchange volume; the value is of type Unsigned. BBP Book bid price; the value is of type Price. BBS Book bid size; the value is of type Unsigned. BAP Book ask price; he value is of type Price. BAS Book ask size; the value is of type Unsigned. SubNoteType Requires a Choice value (e.g SubNoteType=XXX) where XXX must be one of the following choices. SELECTED PAR Order Select Time and NBBO at the time RECEIVED PAR Order Received Time and NBBO at the time TRADED PAR Order Trade Time and NBBO at the time REPRESENT PAR Order represent time and NBBO at the time UID A unique number assigned by the originating system to identify the row in SBT_ORDER_HIST. The value must be Unsigned (e.g. UID=12345).

Field Name	Data Type	Description
		RouteDest The destination of the route as a text field (Text<40>) of workstation name, PAR broker, etc (e.g., RouteSrc=ABC123). Allowed Values: NYSE FloorTrade FloorTradeNamesLater FloorTradeNamesLaterAllocation Allowed Values: BOX ST Requires a choice from the following list: InOrderBook Executed Exposed ToOla Directed CancelPending Eliminated TraderCanceled EliminatedOutOfLimit EliminatedByCircuitBreaker EliminatedOnDisconnection EliminatedByMarketControl EliminatedDueToUnpricedLeg EliminatedDueToTradingRestriction CanceledBySupervisor Received EliminatedDueToTradeLimitExceeded EliminatedDueToTradeActivityLimitExceeded EliminatedDueToMaximumNbTriggersLimitExceeded EliminatedDueToDrillThroughProtection
desiredLeavesQty	Unsigned	Events: Order Cancel Route Event, Option Cancel Route Event The desired number of shares remaining in the order after the cancel request has been issued for a routed order. A value of zero indicates a full cancel.
displayPrice	Price	Events: Order Accepted Event, Order Modified Event, Order Restatement Event, Simple Option Order Accepted Event, Option Order Modified Event, Options Order Restatement Event The displayed price for an order.
displayQty	Unsigned	Events: Order Accepted Event, Order Route Event, Order Modified Event, Order Modify Route Event, Order Restatement Event, Simple Option Order Accepted Event, Stock Leg Order Event, Option Order Modified Event, Stock Leg Modified Event, Option Route Event, Modify Option Route Event, Options Order Restatement Event The displayed quantity for an order.
endDate	Date	Reference Data: Symbol Entry The date a symbol will expire. A value must be entered, if unknown, use Dec 31 9999.

Field Name	Data Type	Description																																												
eventTimestamp	Timestamp	Events: All eventTimestamp generally refers to when an event occurred, however this is subjective depending on the event. Refer to the events definitions to see what this timestamp represents within the context of that event.																																												
exchange	Exchange ID	Events: All Stock Exchange Events, All Options Exchange Events The exchange ID of the exchange associated with the event being reported. Refer to each individual event definition for more specific details.																																												
exchOriginCode	Choice	Events: Simple Option Order Accepted Event, Complex Option Order Accepted Event, Option Order Modified Event, Internal Complex Option Route Event, Option Trade Event, Options Order Restatement Event, Post Trade Allocation Event Exchange-specific codes that specify the origin of an order. CAT will map all of these exchange-defined codes to either C - Customer, F - Firm, or M - Market Maker internally. Only the exchange specific codes as defined below need to be included in this field. Below are the accepted values for each exchange, with their description, and their mapping to C, F, or M in CAT in parentheses. Note that some values are marked as "C/M," C/M will map to customer unless an order has mktMkrSubAccount, when it will map to M. Allowed Values: Cboe Legacy (C1) <i>active 3/29/2019 – 10/4/2019</i> <table><tr><td>B</td><td>Broker Dealer (C)</td></tr><tr><td>C</td><td>Customer (C)</td></tr><tr><td>D</td><td>Customer Floor Broker Workstation (C)</td></tr><tr><td>E</td><td>Customer Internal (C)</td></tr><tr><td>F</td><td>Firm (F)</td></tr><tr><td>H</td><td>Firm Internal (F)</td></tr><tr><td>I</td><td>In Crowd Market Maker (M)</td></tr><tr><td>J</td><td>Firm Floor Broker Workstation (F)</td></tr><tr><td>K</td><td>Broker Dealer Floor Broker Workstation (C)</td></tr><tr><td>L</td><td>B/Ds that are billed as 'Firm' but clear in the 'C' range at OCC (C)</td></tr><tr><td>M</td><td>Market Maker (M)</td></tr><tr><td>N</td><td>Away Market Maker (M)</td></tr><tr><td>R</td><td>Broker Dealer Internal (C)</td></tr><tr><td>U</td><td>MM from FBW (C/M)</td></tr><tr><td>W</td><td>Broker Dealer Floor Broker Workstation (C/M)</td></tr><tr><td>X</td><td>Customer BD (C/M)</td></tr><tr><td>Z</td><td>N,Y from FBW (C/M)</td></tr></table> Allowed Values: NYSE Options <table><tr><td>C</td><td>Customer (C)</td></tr><tr><td>F</td><td>Firm (F)</td></tr><tr><td>BD</td><td>Broker Dealer (C/M)</td></tr><tr><td>M</td><td>Market Maker (M)</td></tr><tr><td>P</td><td>Professional Customer (C)</td></tr></table> Allowed Values: Cboe	B	Broker Dealer (C)	C	Customer (C)	D	Customer Floor Broker Workstation (C)	E	Customer Internal (C)	F	Firm (F)	H	Firm Internal (F)	I	In Crowd Market Maker (M)	J	Firm Floor Broker Workstation (F)	K	Broker Dealer Floor Broker Workstation (C)	L	B/Ds that are billed as 'Firm' but clear in the 'C' range at OCC (C)	M	Market Maker (M)	N	Away Market Maker (M)	R	Broker Dealer Internal (C)	U	MM from FBW (C/M)	W	Broker Dealer Floor Broker Workstation (C/M)	X	Customer BD (C/M)	Z	N,Y from FBW (C/M)	C	Customer (C)	F	Firm (F)	BD	Broker Dealer (C/M)	M	Market Maker (M)	P	Professional Customer (C)
B	Broker Dealer (C)																																													
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BD	Broker Dealer (C/M)																																													
M	Market Maker (M)																																													
P	Professional Customer (C)																																													

Field Name	Data Type	Description
		B Broker Dealer (C) C Customer (C) F Firm (F) J Joint Back Office (F) L Non TPH Affiliate (C) M Market Maker (M) N NonRegMarketMaker (M) U ProCustomer (C)
		Allowed Values: BOX
		6 Public Customer (C) 7 Broker Dealer (F) 8 Market Maker (M) W Broker Customer (C) X Away Affiliated Market Maker (M) T Professional Customer Y Away Broker or Floor Broker (F) Z Away Market Maker or Floor Market Maker (M) V Away Broker Customer or Floor Broker Customer (C)
		Allowed Values: MIAX
		1 Market Maker (M) 2 Away MM (M) 3 Broker Dealer (F) 4 Firm (F) 5 Pri Customer (C) 6 Non Pri Customer (C)
		Allowed Values: MIAX Pearl
		1 Market Maker (M) 2 Away MM (M) 3 Broker Dealer (F) 4 Firm (F) 5 Pri Customer (C) 6 Non Pri Customer (C)
		Allowed Values: MIAX Emerald
		1 Market Maker (M) 2 Away MM (M) 3 Broker Dealer (F) 4 Firm (F) 5 Pri Customer (C) 6 Non Pri Customer (C)
		Allowed Values: NASDAQ Options - NOBO, PHLX, NOM, ISE, GEMX, MRX
		1 Customer (C)

Field Name	Data Type	Description
		2 Firm (F) 3 Floor MM (M) 4 Off Floor MM (M) 5 Broker Dealer (C) 6 Professional Customer (C) 7 Proprietary Customer (C) 8 Retail Customer (C) 9 JBO (F) 10 Broker Dealer Firm (F)
executingFirm	Alphanumeric(8)	Events: Simple Option Order Accepted Event, Option Order Modified Event, Option Trade Event, Options Order Restatement Event The OCC number of the executing firm.
executionCodes	Name / Value Pairs	Events: Order Trade Event, Order Fill Event, Trade Correction Event, Option Trade Event, Stock Leg Fill Event, Options Trade Correction Event Codes that provide a way to augment executions with specific information about the execution. The Execution Codes field has the same formatting as Order Handling Instructions, where zero or more codes can be entered to provide additional execution information, like where a trade may have been executed on the floor. Each code is 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). All instructions that apply to the order are to be included. Allowed Values AUC If the trade happened as part of an auction, this code identifies the auction by name (e.g., AUC=CROSS) PCTP Executions for FLEXPCT orders are reported, with the price as the final dollar value of the trade. However, the price was determined as a percentage execution. The original trade percentage value is reported using the PCTP execution code, which requires a Numeric(10,8) value, where 94.5% would be reported as PCTP=94.5. PCTO Executions for FLEXPCT trades are reported using the optionID of the percentage product. However, the final execution happens with a different optionID that is not percentage based. This final optionID is a Text<40> field, and is reported in the trade with the PCTO execution code (e.g., PCTO=OPTIONID1234). NOBUYID Indicates that there is neither a quoteID nor an orderID associated with the buy side of the trade. NOSELLID Indicates that there is neither a quoteID nor an orderID associated with the sell side of the trade. ASOF The trade is being reported as- of another date. This option requires a Date value (e.g. ASOF=20171218). Allowed Values Cboe Legacy (C1) <i>active 3/29/2019 – 10/4/2019</i> TradeType This code requires a choice value (e.g., TradeType=N) where N is a value from the following list: B Blocktrade R Regular Trade

Field Name	Data Type	Description
		F Intermarket Sweep L No Print Linkage Trade M Manual Trade P Par Trade X Cross Product Leg Trade S Cross Product Cross Trade I Cross Product AIM Cross Trade H Handheld Trade Q Par to Market Maker Trade 1 Regular trade reversal 2 No Print Linkage Trade Reversal 3 No Print Linkage Trade Manual T Two-Day Trade
		TradeSource This code requires a choice value (e.g., TradeSource=PAR) where the value is one of the three following choices: PAR System Manual
		FirmTradeRptTime Shows the Firm Trade Report Time (applies to Block trade and manual trades, time the firm/market maker reports the floor trade), requires a timestamp (e.g., FirmTradeRptTime=20170108T023000.123456789). Note that the timestamp must be in the CAT timestamp format described in section 1.5 of the tech specs
		FirmTradeTime Shows the Firm Trade Time - applies to manual trades - Market Makers have an option to specify when they did the trade on the floor. Requires a timestamp (e.g., FirmTradeTime=20170108T023000.123456789). Note that the timestamp must be in the CAT timestamp format described in section 1.5 of the tech specs
		TradeRptTime Shows the Tape Report Time (when the system reports to OPRA i.e. when the GUI user hits the send button) applies to manual and block trades only. Requires a timestamp. (e.g., TradeRptTime=20170108T023000.123456789). Note that the timestamp must be in the CAT timestamp format described in section 1.5 of the tech specs
		EndorseTime (Floor only) In the case of a Names Later transaction, \$TIME is the time this execution was endorsed by this side. If not specified, assume to be equal to FirmTradeRptTime. (e.g. EndorseTime=111500.123456789.) This timestamp must be in the CAT time format described in section 1.5 of the tech specs
		NamesLater (Floor only) If present, this specifies that this side is reporting Names Later. EndorseTime will differ from FirmTradeRptTime. (e.g. NamesLater=Y)
		BBOBP CBOE BBO Bid Price at the time of the trade. Requires a price value. (e.g., BBOBP=12.25)
		BBOBS CBOE BBO Bid Size at the time of the trade. Requires an integer value. (e.g., BBOBS=400)
		BBOAP CBOE BBO ask price at the time of the trade. Requires a price value. (e.g., BBOAP=12.50)

Field Name	Data Type	Description
		BBOAS CBOE BBO ask size at the time of the trade. Requires an integer value. (e.g., BBOAS=200) BDATE Shows the business date. Requires a date value expressed as YYYYMMDD (e.g., BDATE=20170112). FloorActivityType Types of Floor Execution; Choice fields: Unspecified TradeWithAllExecution TradeWithBookExecution SwapExecution COAExecution InCrowdExecution RepresentedInCrowd TradeInitiatedInCrowd TradeEndorsement Allowed Values: Cboe DACClosePrice Closing price for the underlying. Accepts a price value expressed as ###.#### (e.g. 12.3456). DeltaRefPrice The value of the underlying as known by the submitter of the order. Accepts a price value expressed as XX.XXXX (e.g. 12.3456). DeltaValue The multiplier applied to the difference between the referencePrice and the closing price of the option's underlying value (specified per leg in the case of a complex order). Accepts a value from -1.0000 to 1.0000. FirmTradeRptTime Shows the Firm Trade Report Time (applies to Block trade and manual trades, time the firm/market maker reports the floor trade), requires a timestamp (e.g., FirmTradeRptTime=20170108T023000.123456789). Note that the timestamp must be in the CAT timestamp format described in section 1.5 of the tech specs INTLIQ Liquidity classification internal to Cboe. Requires a choice value (e.g., INTLIQ=X) from the following list: A added R removed X routed B both order washed/removed some liquidity then got booked D externally removed c conditionally added C auction Q options wait order P RemovedPending SUBLIQ Cboeinternal subliquidity indicator. This is filled in on executions once the code offering the best price to the member is selected. Requires a choice value (e.g., SUBLIQ=N) from the following list: N normal H hidden B SUM (Options only – step up auctions mechanism)

Field Name	Data Type	Description
		R bolt route D dark book S setter J joiner I hidden improved T dark Book IOC O open auction C close auction P IPO auction A halt auction V visible improved E retail price improvement (BYX Equities: Retail Order vs. Retail Price Improving Order) K hidden reserve (hidden portion of a reserve order) b AIM – Automated Improvement Mechanism c Cboe Market Close m hidden midpoint (US Equities: Hidden midpoint execution) o open queued h halt queued q QCC (Options only - Qualified Contingent Cross) r Persisted (GTC restatement) s SAM Auction k BrokerPreferencing u ClosingCross v ClosingCrossBrokerPref n CLNK f Floor Order U Turner M MiddayCross y Related Futures Cross (RFC) z Position Compression Cross (PCC)
		TradeRptTime Shows the Tape Report Time (when the system reports to OPRA i.e. when the GUI user hits the send button) applies to manual and block trades only. Requires a timestamp. (e.g., TradeRptTime=20170108T023000.123456789). Note that the timestamp must be in the CAT timestamp format described in section 1.5 of the tech specs
		Allowed Values: BOX
		TT Indicates when the trade was done. Requires a choice value from the following list: Opening MarketOperation ContinuousTrading GuaranteedAuction SolicitationAuction FacilitationAuction

Field Name	Data Type	Description
		ExecutedAway FloorTrade STI Indicates the trade type. Requires a choice value from the following list: - RegularTrade - As-of-Trade - Block Trade - Late Trade - Hidden Trade - Price Volume Adjustment - Exchange For Risk - Basis Swap - Isolnbound - GdoTradeThrough - PipSweep - USContingent - Pip - Crossed - FloorTrade SID Indicate the Strategy id. Value associated will be blank or will contain the Strategy Identification in the format of Text(10). STID Indicate the Strategy Trade Id. Value associated will be blank or will contain the Strategy Identification SV Indicate the Strategy Verb. Value associated will be blank or will contain B (for Buy), S (for Sell). Note: allowed values included "Sell" or "Buy" as part of back processing only for trade dates 3/29/19 to 6/21/19. They were active between the processing dates of 7/26/19 to 8/30/19. Allowed Values: MIAX AUC Indicates an auction. Requires one of the values from the following list: 1 Opening 2 Reopening 3 Closing 4 Routing 5 LiquidityRefresh 6 PairedPrime 7 CustomerCrossPrime 8 QualifiedContingentCrossPrime 9 LiquidityExposure C ImmediateUncrossing I IIPOpening L CLEP P RIPreEvaluationCross R RIPreEvaluation U URIPAuctionOnArrival

Field Name	Data Type	Description
		Y IIPOpeningCross Allowed Values: MIAX Emerald AUC Indicates an auction. Requires one of the values from the following list: 1 Opening 2 Reopening 3 Closing 6 PairedPrime 7 CustomerCrossPrime 8 QualifiedContingentCrossPrime C ImmediateUncrossing I IIPOpening L CLEP P RIPReEvaluationCross R RIPReEvaluation U URIPAuctionOnArrival Y IIPOpeningCross Allowed Values: CHX TradeType Name value pair, which requires value to be one of the following choices from the following list: CSP CSS entered correspondent trades AWA Away Market Executions CHX ECHX Trade MAN Manual DRP Drop copy away market execution NAM Recovery required RCV Recovery of NAME/NAME trade AWE Away sent electronically thru CHX systems AWM Away sent manually thru CHX systems RPT Allocation report AWF Away market trades cleared by CHX VEN Away market clearing flip - non-ORS AAW IB Alternative Away Market Execution AOR ORS Away market clearing flip RPS Riskless Principal Second Component Trade SNAP Sub-second Non-displayed Auction Process (SNAP) Trade executionID For OrderFill, this is the execution ID received from the routing vendor. The value is of type Text<40> executionMarket For OrderFill - requires a choice value from the following list: XCHI Chicago Stock Exchange XNYS New York Stock Exchange XASE American Stock Exchange ARCX NYSE ARCA XBOS Boston Stock Exchange

Field Name	Data Type	Description
		XPHL Philadelphia Stock Exchange XCIS National Stock Exchange XADF FINRA ADF XCBO Chicago Board Options Exchange XNAS NASDAQ Stock Exchange BATS Cboe BZXStock Exchange BATY Cboe BYZ - Exchange, Inc. EDGA Cboe EDGA EDGX Cboe EDGX IEXG Investors Exchange
		Allowed Values: NYSE Options
		OpenAuction
		Open Auction Part of back processing only for trade dates 3/29/19 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.
		CUBEAuction
		CUBE Auction Part of back processing only for trade dates 3/29/19 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19. .
		Complex
		Cabinet
		Flex
		Man
		Allowed Values: NYSE Equities
		Auction
		OPEN
		CLOSE
		CROSS
		Allowed Values: IEX
		I Continuous Trade on IEX
		L Traded with Displayed Liquidity
		S Self Trade on IEX
		X Opening Match on IEX
		O Opening Auction on IEX
		C Closing Auction on IEX
		H Halt Auction Opening on IEX
		N IPO Auction Opening on IEX
		Allowed Values: NASDAQ ISE, GEMX, MRX, NOBO
		liquidityCode Name value pair, requires one of the following values from the following list:
		0 None
		1 Maker
		2 Taker
		4 Response

Field Name	Data Type	Description
		5 Hidden
		6 OpeningRotation
		7 Cross
		8 FlashedOrder
		9 FlashResponse
		10 RoutedOut
		11 TradeReport
		12 ComboMakerAgainstCombo
		13 ComboTakerAgainstCombo
		14 ComboResponseAgainstCombo
		15 ComboHiddenAgainstCombo
		16 ComboOpeningRotation
		17 ComboCross
		18 ComboTakerAgainstRegular
		19 RegularMakerAgainstCombo
		20 ComboTakerAgainstIO
		21 RegularTakerAgainstIO
		22 IOMakerAgainstCombo
		23 IOMakerAgainstRegular
		24 RegularMakerAgainstIOParticipant
		25 IOParticipantTakerAgainstRegular
		26 BrokenPriceImprovement
		27 BrokenFacilitation
		28 BrokenSolicitation
		29 ComboBrokenPriceImprovement
		30 ComboBrokenFacilitation
		31 ComboBrokenSolicitation
		32 Block
		33 BlockResponse
		34 DirectedResponse
		35 Facilitation
		36 FacilitationResponse
		37 PriceImprovement
		38 PriceimprovementResponse
		39 Solicitation
		40 SolicitationResponse
		41 QualifiedContingentCross
		42 CustomerToCustomer
		43 ComboFacilitation
		44 ComboFacilitationResponse
		45 ComboPriceImprovement
		46 ComboPriceImprovementResponse
		47 ComboSolicitation
		48 ComboSolicitationResponse
		49 ComboQualifiedContingentCross
		50 ComboCustomerToCustomer
		51 SweepRoutedOut

Field Name	Data Type	Description
		52 SweepTradeReport OTHER Other
		BuyMatchId Unsigned value SellMatchId Unsigned value AuctionId Unsigned value TradeSource Name value pair, requires one of the following values from the following list:
		0 AUTO_EXECUTION 1 OPENING 2 FLASH 3 EXPOSURE 4 BLOCK 5 PIM 6 PIM_COMBO 7 FAC 8 FAC_COMBO 9 SOL 10 SOL_COMBO 11 CCC 12 CCC_COMBO 13 QCC 14 QCC_COMBO 15 MANUAL 16 NOS 17 OPENING_UNCROSS 18 UNCROSS OTHER OTHER
		Allowed Values: NASDAQ – PHLX, NOM, NOBO
		TradeSource Name value pair, requires one of the following values from the following list:
		1 AUTOEX 2 DET 3 EBOOK 4 NOS 5 FBMS 6 SWEEP 7 QUOTE_M 8 CO_SWEEP 9 LEGGING 10 COMPLEX 11 OPENING 12 COLA 13 COCRA 14 PIXL_AUTO 15 PIXL_STOP 16 QCC

Field Name	Data Type	Description
		17 QCC_FBMS FLEX FLEX OTHER OTHER
		BuyMatchId Unsigned value SellMatchId Unsigned value AuctionId Unsigned value
		Allowed Values: Nasdaq – NOBO <i>in addition to values defined above</i>
		liquidityCode Name value pair, requires one of the following values from the following list: 53 ComboTakerAgainstRegularThruNbbo 54 ComboTakerAgainstIOThruNbbo 55 SimpleExposureOrderInitiatorUponReceipt 56 SimpleExposureOrderInitiator 57 SimpleExposureOrderResponder
		TradeSource Name value pair, requires one of the following values from the following list: 20 AUTO_EXECUTION 21 OPENING 23 EXPOSURE 24 BLOCK 25 PIM 26 PIM_COMBO 27 FAC 28 FAC_COMBO 29 SOL 30 SOL_COMBO 31 CCC 32 CCC_COMBO 33 QCC 34 QCC_COMBO 35 MANUAL 36 NOS 37 OPENING_UNCROSS 38 UNCROSS
		Allowed Values: LTSE L Continuous Trade on LTSE S Self Trade on LTSE O Opening Auction on LTSE C Closing Auction on LTSE

Field Name	Data Type	Description
		H Halt Auction Opening on LTSE N IPO Auction Opening on LTSE
executionTimestamp	Timestamp	Events: Order Trade Correction, Option Trade Correction When a trade is reported, the time of the trade is reported as the eventTimestamp. The executionTimestamp is used in a correction event if the time of the trade needs to be changed.
exerciseStyle	American	Reference Data: Simple Option Series Dictionary Entry Specifies the exercise style of the Option Series in Simple Option Series Dictionary Entry. Allowed Values American European
expirationDate	Date	Reference Data: Simple Option Series Dictionary Entry The date an options contract will expire, taking the format: YYYYMMDD.
fillID	Text (40)	Events: Order Fill Event, Stock Leg Fill Event A unique identifier for the transaction. The combination of reporter, date, symbol, side, and fillID should be unique.
floorBroker	Member Alias	Events: Option Trade Event The Member Alias of the executing floor broker.
handlingInstructions	Name / Value Pairs	Events: Order Accepted Event, Order Route Event, Order Modified Event, Order Modify Route Event, Order Restatement Event, Simple Option Order Accepted Event, Complex Option Order Accepted Event, Complex Option Order Modified Event, Stock Leg Order Event, Option Order Modified Event, Stock Leg Modified Event, Option Route Event, Modify Option Route Event, Options Order Restatement Event The order handling instructions field is a way to provide multiple instruction codes in a somewhat 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). All instructions that apply to the order are to be included. Allowed Values: Boolean <i>presence indicates truth</i> AON All or None AUC Auction Eligible DNR Do Not Route FOK Fill or Kill IOC Immediate or Cancel ISB Intermarket Sweep Book ISO Intermarket Sweep NH Not Held OPG At the Opening PSO Post Only WTP Wash Trade Prevention Note: Some exchanges have special values to indicate handling of ISO orders. All ISO orders must be marked with the boolean ISO value. Thus, if

Field Name	Data Type	Description
		an exchange denotes an ISO order with some custom attribute, it must also be marked with the common ISO value. Allowed Values: Name Value Pairs MIN Minimum Quantity - requires an Integer value, representing the minimum quantity allowed to be executed in a single transaction (e.g., MIN=1000). WD With Discretion Price - requires a Numeric value, representing the discretion price (e.g., WD=12.50) STP Stop Price - requires a Numeric value representing the stop price (e.g., STP=17.95) 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. XTIME Expire Time - requires a Time value, representing the time that the order expires. The value must in a valid Timestamp format. R2E Route to Exchange - requires Exchange ID (e.g., R2E=G). The desired route destination is not the party receiving the actual route. The party receiving the route does not have discretion as to where to route the order. It must be routed to a specific exchange. R2M Route to Industry Member - requires Member Alias (e.g., R2E=ABC123). The desired route destination is not the party receiving the actual route. The party receiving the route does not have discretion as to where to route the order. It must be routed to a specific industry member. R2O Route to Other - requires Text(20) (e.g., R2O=Somebody). The desired route destination is not the party receiving the actual route. The party receiving the route does not have discretion as to where to route the order. It must be routed to an entity who is neither an exchange nor an industry member (i.e., the entity does not have a CAT reporting responsibility). Allowed Values: Cboe Legacy (C1) <i>active 3/29/2019 – 10/4/2019</i> MIT Market if touched, becomes a market order if the price is touched. Requires a price value (e.g., MIT=20.53). AucResp A response to an auction, the remainder is canceled at the end of the auction. Requires a integer value representing the auction ID being responded to. (e.g., AucResp=1234). Reserve Reserve, only a portion of the order is displayed. Requires an integer value representing quantity. (e.g., Reserve=300). PMM Preferred market maker, requires a text (text, 10) value representing the acronym of the preferred market maker. (e.g., PMM=FRMA) AIM Automated Improvement Mechanism. Requires a choice value (e.g., AIM=AIM) selected from the following list AIM standard AIM

Field Name	Data Type	Description
		AIQ QCC Primary Order AIS Sweep and AIM primary order AIR Re-route if cannot AIM primary order ARE Contra order to AIM. Requires a text (text 20) value representing the primary order ID. (e.g., ARE=AB54321) AREOUT Contra order to AIM where the user can opt out. Requires a text (text 20) value representing the primary order ID. (e.g., ARE=AB54321) Designation Order designation, requires a choice value (e.g., Designation=4) from the following list: 1 Tied Hedge 2 SPXCOMBO 3 Tied Hedge and Cash Spread 4 SPXCOMBO and Cash Spread 5 Cash Spread UHI User handling instruction, requires a choice value (e.g., UHI=4) from the following list: 1 Do Not Auction 2 Held 3 Solicited Order 4 Held and Solicited 5 Held and no COA 6 Electronic Only 7 Electronic Only and Solicited 8 Electronic Only and no COA Allowed Values: Cboe ExecInst Provides additional values for execution instructions that aren't already present in orderType or other handlingInstructions values. Requires a choice value (e.g., ExecInst=U) from the following list: N No special instructions s sweep M hidden peg to midpoint L alternative midpoint peg to less aggressive midpoint or 1 tick inside of NBBO m midpoint peg no lock hidden peg to midpoint but duck at or beyond limit d displayed peg order with discretion to the midpoint g AllOrNone I midpoint match (EDGX) Q market maker peg order v Dart dark route before outbound w DoNotDart opt of Dart x ImproveOnly Cboe only IOC that only matches better than NBBO y TAISO z DarkScan hit scan fast DLPs first

Field Name	Data Type	Description
		t DarkScanWithoutDart r LateAuction late limit on open/close U route peg order u DartOnly route only to a dark venue F FastDart S SuperDart f ISO R PrimaryPeg H Minimum Not Held P MarketPeg X MidpointSwapOrder e Midpoint Discretionary Order with Quote Depletion Protection AutoMatchLimit Auto Match any price improvement up to this price on a two-sided auction. Requires a PRICE datatype AutoMatchMkt Auto Match any price improvement on a two-sided auction. Boolean – true if present LastPriority The B/D does not want their full entitlement at the final auction price. Boolean – true if present RetailPriority Retail orders are given priority. Boolean – true if present FloorTraderType Type of Trader; Choice Field Unspecified PAROfficial PARBroker InCrowdMarketMaker AllowExposure Expose auction order. Boolean – true if present WorkStationID Work Station Identifier Name/Value Pair Alphanumeric(4) Reserve Number of shares of a reserve order to display. Requires an UNSIGNED value ExtExecInst Requires a choice value from the following list: N None T Retail Price Improving P Retail Order - Price Improvement Only R Retail Order S Retail Order NoFlagCLC X Retail Priority Order Y Retail Priority Order NoFlagCLC MaxRemovePct The max percentage an order is allowed to remove before booking. Requires an Unsigned (e.g., MaxRemovePct=10) MaxRemovePercent <i>The max percentage an order is allowed to remove before booking. Requires an Unsigned (e.g., MaxRemovePct=10). Part of back processing only for trade dates 3/29/2019 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.</i> AttributedOrder Requires a choice value from the following list: N None

Field Name	Data Type	Description
		Y Attributed R Retail C AttributedClientIdOnly Z AttributedBoth DisplayRange This will be of type Unsigned, and is used for a “random replenishment” reserve order. The reload quantity is randomly selected using Reserve +/- displayRange e.g. Reserve of 1000, displayRange of 200, reload quantity will be randomly selected from 800, 900, 1000, 1100, or 1200. Allowed Values: Cboe Equities TifMod Supplemental time-in-force information. Requires a choice value (e.g., TifMod=1) from the following list: 1 include early (7 – 8 AM) and pre-market trading sessions (8 AM – 9:30 AM) 2 include pre-market session (8 - 9:30 AM) 3 include early (7- 8 AM), pre (8 – 9:30 AM), and post-market sessions (4 -5 PM BZX and BYX, 4 – 8 PM for EDGA and EDGX) 4 include pre (8 – 9:30 AM), and post-market sessions (4 -5 PM BZX and BYX, 4 – 8 PM for EDGA and EDGX) Allowed Values: Cboe Options TifMod Supplemental time-in-force information. Requires a choice value (e.g., TifMod=1) from the following list: 1 include pre-market session (7:30 - 9:30 AM) 5 GTH-Eligible (Options only) 3 <i>Part of back processing only for trade dates 3/29/2019 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.</i> Allowed Values: BOX EP Requires Member Alias (e.g., EP=910). IML Indicate the Inter Market Linkage Behavior for the order. Requires a choice value from the following list: FLASH ROUTING NONE NBBO ISO CONTINGENT NOFLASH PT Indicate BOX Price Term for the order. Requires a choice value from the following list: PIP SOLICITATION FACILITATION CROSS

Field Name	Data Type	Description
		DIRECTED PREF FLOOR OT Indicate the order type for auction phase. Requires a choice value from the following list: IMPROVE INITO EXPOSED CROSS CONTINGENT MBF GTD Indicates Date in YYYYMMDD Format QT Requires a choice value from the following list: MINIMUM SURRENDER MIP AQ Indicate the additional quantity when QT is either MINIMUM or SURRENDER. Requires an unsigned integer value (e.g, AQ=1000) AP This will be field of type Price AT Requires a choice value from the following list: PIP SOLICITATION FACILITATION CROSS FIXED FLOOR AID This will contain a "UNSIGNED" number that will allow BOX to track "Auction Phase Number" (e.g., AID=123456) Allowed Values: CHX ExecInst Requires a choice value (e.g., ExecInst=f) from the following list: 5 Held E DNI - Do not increase F DNR - Do not reduce K Cancel on Trading Halt X TALG - Trade Along y Trade At Intermarket Sweep (TAISO) q Always Quote I Midpoint Cross v Stock-Option (for cross order only) TradeThruExemptReason Requires a choice value (e.g., TradeThruExemptReason=2) from the following list: 1 Benchmark 2 QCT Qualified Contingent Trade 3 Bonafide Error Indicator PriceSliding Requires a choice value (e.g., PriceSliding=L) from the

Field Name	Data Type	Description
		following list: L CHX Only – Slide limit price on lock NBBO S CHX Only – Slide limit price on lock or cross NBBO MatchTradePrevention Requires a choice value (e.g., MatchTradePrevention=N) from the following list: I MTP Inactivate N MTP Cancel Newest O MTP Cancel Oldest B MTP Cancel Both MTPSublevelInd Requires a choice value (e.g., MTPSublevelInd=1) from the following list: [0-9,A-Z,a-z] Allowed Values: NYSE Options NOW ISO AON PNP PNPLO PNPB ALO FloorTrade FloorTradeNamesLater FloorTradeNamesLaterAllocation ClearTheBook Cabinet Flex CUBEAUCPI CUBEAUCF CUBEAUCS QCC COA PNP Stop Requires a Price value (e.g., Stop=42.42) StopLimit Requires a Price value (e.g., StopLimit=42.42) Allowed Values: NYSE Equities ALO ISO TradeAtISO Non-Routable RoutableIOC Tracking Non-Display RPI Retail

Field Name	Data Type	Description
		MPEG Market Peg PPEG Primary Peg DPO DPP MPL PO 945 355 945-355 ImblOffset NonRoutableIOC ClosOffset LPEG DMP DLP NoMPL NoIOI NoMPL-IOI Allowed Values: NOBO, PHLX, NOM, ISE, GEMX, MRX <u>Boolean Values</u> PostOnly PostOnlyPrice WAIT AllowFlash AllowExposure DNR DNTT Do not trade through DNA Do not Auction AO Auction Only <u>Name Value Pairs</u> DMM STRING; DMM Name <i>PMM</i> <i>STRING; PMM Name – Part of back processing only for trade dates 3/29/19 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.</i> DisplayWhen For reserve orders, requires one of the following 1 Immediate 2 onExhaust RefreshMax UNSIGNED; Contracts RefreshMin UNSIGNED; Contracts InitDispContracts UNSIGNED; Contracts [Initial Display Contracts for reserve orders] <i>Reserve</i> <i>UNSIGNED; Contracts [Initial Display Contracts for reserve orders] – Part of back processing only for trade dates 3/29/19 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.</i>

Field Name	Data Type	Description
		RoutingStrategy Must be one of the following SRCH FIND SEEK
		RespAuctionId UNSIGNED; auctionId MIN UNSIGNED; Contracts OrderSource Must be one of the following FIX OTTO SQF FBMS_FIX FBMS PRECISE_FIX QUO
		BrokerPct NUMERIC<3,4>; Percentage EffectiveTime TIME StepUpPrice PRICE StepUpPriceType Must be one of the following 1 Market 2 Limit
		DMA DMA Name [for route event], where 'DMA Name' can have values from the following list: CITI WEX MLGW GSG GSW <i>Part of back processing only for trade dates 3/29/19 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19.</i> OTHER
		DestExch Dest Exch [for route event], where 'DestExch' can have values from the following list;: 11 AMEX 12 BOXE 13 CBOE 14 EDGO 15 GMNI 16 ISEX 17 MCRY 18 MIAX 19 NYSE 20 MPRL 21 NSDQ 22 NOBO 23 CBC2 24 PHLX 25 BATS

Field Name	Data Type	Description
		26 EMLD 1 BNY 2 CHBC 3 LBKI 4 FOGS OTHER OTHER
		Allowed Values: ISE, GEMX, and MRX <i>in addition to values defined above</i> CrossType Value must be one of the values from the following list: 1 None 2 Close 3 Open 4 PricImp 5 QCC 6 Solicit 7 Facilit 8 Flash 9 Block 10 Exposure 11 Cust OTHER

Field Name	Data Type	Description
		35 QCC 36 Solicit 37 Facilit 39 Block 40 Exposure 41 Cust
		Allowed Values: BX, PSX, NSDQ MELO for a Midpoint ELO order SUPL for a Supplemental order RPI for a Retail Price Improvement Program order ExecBroker Value must be one of the values from the following list: BCRT BCST BDRK BMOP BSCN BSKN BSKP BSTG BTFY DOTA DOTD DOTM DOTI MOPP TFTY SCAN SKIP SKNY SAVE QSAV QTFY DOTZ LIST CART SOLV QSLV ESCN MOPB RFTY QRTY INET ISAM ISBX

Field Name	Data Type	Description
		ISBY ISBZ ISCX ISIX ISNA ISNX ISNY ISPA ISPX ISCN ISLT PCRT PMOP PSCN PSKN PSKP PSTG PTFY QCST QDRK STGY TFYB TFYX XCST XDRK OTHER Display Value must be one of the values from the following list: 1 Attributable-Price to Display 2 Anonymous-Price to Comply 3 Non-Display 4 Post-Only 5 Imbalance-Only (for opening and closing cross only) 6 Mid-Point 7 Mid-Point Post Only 8 Post-Only and Attributable – Price to Display 9 Retail Order Type 1 10 Retail Order Type 2 11 Retail Price Improvement Order ExecInst Value must be one of the values from the following list: 1 Midpoint Peg 2 No Peg 3 Market Peg 4 Quoting Peg 5 Primary Peg 6 INAV pegging 7 means Intermarket Sweep Order (ISO)

Field Name	Data Type	Description
		8 means Trade-at Intermarket Sweep Order 9 means Reactive Trade Now 10 means Reactive Trade Now opt-out DMA DMA Name [for route event], where 'DMA Name' can have following values: GSET MSCO OTHER Allowed Values: MEMX RSV Reserve RP Re-Price PegO Peg Offset, only on Primary Peg Orders. Requires a value for the offset +x.xx or -x.xx. (e.g. PegO=0.05, PegO=-0.05) Allowed Values: MIAX PEARL Equities RouteOnce Order will route upon arrival if marketable against away quotes and then, depending on time-in-force, will rest on the MIAX PEARL book. ReRoutable Order will route upon arrival if marketable against away quotes and then rest on the MIAX PEARL book. If an away market subsequently locks or crosses the order, the order will route again.
initiator	Choice	Events: Order Modified Event, Order Canceled Event, Quote Cancel Event, Option Order Modified Event, Complex Option Order Modified Event, Stock Leg Modified Event, Option Order Canceled Event Indicates who initiated a cancel or modification request. If an order/quote is implicitly modified or canceled via an unsolicited action (e.g., peg order price change or cancelation due to timeout), then the initiator is the exchange itself. If an order/quote is modified or canceled as a result of an explicit request from the party that sent the order/quote, then the initiator is the firm/market maker that sent the explicit modify/cancel request. Thus, all explicit modify/cancel requests will have an initiator of either Firm or MarketMaker, as appropriate and all implicit, unsolicited modify/cancel actions will have an initiator of Exchange. Allowed Values Firm Exchange MarketMaker
IPO	Boolean	Reference Data: Symbol Entry Indicates whether the issue is an Initial Public Offering ("IPO"). It will be set to false on the day after the IPO occurs (required for NMS).
issueType	Choice	Reference Data: Symbol Entry Specifies the type of equity being described in the equity symbol entry. Allowed Values

Field Name	Data Type	Description
		NMS OTC Index ETF
kind	Choice	Reference Data: Option Series Dictionary Entry, Complex Option Dictionary Entry Specifies if an option is a simple, complex, flex, or percentage denominated flex option. For the value FLEXPCT, the strike price and order prices of the option are in percentages. Allowed Values Complex Standard Non-Standard FLEX FLEXPCT
leavesQty	Unsigned	Events: Order Canceled Event, Order Trade Event, Order Fill Event, Order Cancel Route Event, Order Restatement Event, Option Order Canceled Event, Option Cancel Route Event, Option Trade Event, Stock Leg Fill Event, Options Order Restatement Event The quantity remaining unfilled after the event. The meaning of this field is subjective depending on the event, refer to each individual event definition for more detail.
legType	Choice	Reference Data: Complex Option Dictionary Entry For a Complex Option Dictionary Entry, this field defines the type of each leg. Allowed Values Equity Index Option
liquidityCode	Choice	Events: Order Trade Event, Option Trade Event Included in the side trade details for options and equity trade events, represents whether a given side was adding or removing liquidity. Allowed Values Added Removed RoutedOut Opening-ReopeningAuction ClosingAuction CrossOrderExecution Other
		Allowed Values: MIAX PEARL Equities RoutingOrderProtection Liquidity protection indicator for routed or away trades.
listedSymbol	Symbol	Reference Data: Symbol Dictionary Entry

Field Name	Data Type	Description
		The symbol in the symbology of the listing exchange.
listingParticipant	Participant ID	Reference Data: Symbol Entry, Symbol Dictionary Entry The exchangeID of the listing exchange for the symbol being described in the event where this field is present.
lotSize	Unsigned	Reference Data: Symbol Entry Used in a symbol definition entry to state the number of shares in a round lot.
marketMaker	Member Alias	Events: Market Maker Dictionary Entry, Quote Event, Quote Cancel Event The Member Alias assigned by the SRO as identified in the Market Maker Dictionary or to identify the market maker issuing the quote or quote cancel. In the case where a market maker has multiple users (e.g., acronyms used to differentiate users within the same MM), there would be a separate Member Alias given to each user or sub-account.
marketMakerStatus	Choice	Reference Data: Market Maker Dictionary Active - Market Maker becomes active in the symbol Inactive - Market Maker has become inactive in the symbol
marketMakerType	Choice	Reference Data: Equity Market Maker A list of exchange defined values for the Equity Market Maker distinguishing between types or designations of market makers. Below are the common allowed values that are available to all exchanges. Allowed Values MM Market Maker (<i>default value</i>) DMM Designated Market Maker LMM Lead Market Maker SLP Secondary Liquidity Provider SLMM Secondary Liquidity Market Maker
memberAliases	Array of Member Alias	Reference Data: Member Dictionary Entry A list of member aliases for an SRO member.
mktMkrSubAccount	Text (20)	Events: Simple Option Order Accepted Event, Option Order Modified Event, Option Trade Event, Option Order Restatement Event, Post Trade Allocation Event The sub-account for the market maker. This is a text field and will be treated as pass through data - not validated.
nbbPrice	Price	Events: Order Accepted, Order Route, Order Modified, Order Trade, Order Modify Route, Simple Option Order Accepted, Stock Leg Order, Option Order Modified, Stock Leg Modified, Option Route, Modify Option Route, Simple Option Trade The national best bid price at the moment the event. 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	Unsigned	Events: Order Accepted, Order Route, Order Modified, Order Trade, Order Modify Route, Simple Option Order Accepted, Stock Leg Order, Option Order Modified, Stock Leg Modified, Option Route, Modify Option Route, Simple Option Trade The national best bid quantity at the moment the event. If the event changes

Field Name	Data Type	Description
		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	Events: Order Accepted, Order Route, Order Modified, Order Trade, Order Modify Route, Simple Option Order Accepted, Stock Leg Order, Option Order Modified, Stock Leg Modified, Option Route, Modify Option Route, Simple Option Trade The national best offer price at the moment the event. 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	Unsigned	Events: Order Accepted, Order Route, Order Modified, Order Trade, Order Modify Route, Simple Option Order Accepted, Stock Leg Order, Option Order Modified, Stock Leg Modified, Option Route, Modify Option Route, Simple Option Trade The national best offer quantity at the moment the event. 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.
note	Text (255)	Events: Note Event Free form text provided by the exchange to describe the notation of the event.
noteType	Choice	Events: Note Event For a note event, classifies the type of note. Allowed Values MISC Allowed Values: BOX StateChanged Allowed Values: Cboe Legacy (C1) Only active 3/29/2019 – 10/4/2019 CBOE:1 Order Route Event (When an order is routed between internal CBOE systems). The source and destination will indicate more details. CBOE:2 Cross Order Route Event CBOE:3 Auction Start CBOE:4 Auction End CBOE:5 PAR_BROKER_USED_MKT_DATA CBOE:6 PAR_BROKER_MKT_DATA CBOE:7 PAR_BROKER_LEG_MKT CBOE:8 PAR_MANUAL_MARKET_DATA Allowed Values: Cboe Options active beginning on 10/7/2019 CBOE:1 Order Route Event (When an order is routed between internal CBOE systems). The source and destination

Field Name	Data Type	Description
		will indicate more details. CBOE:6 PAR_BROKER_MKT_DATA CBOE:7 PAR_BROKER_LEG_MKT CBOE:8 PAR_MANUAL_MARKET_DATA Allowed Values: NYSE Options Floor Allowed Values: NYSE Equities CrossingSession
onlyOneQuote	Boolean	Events: Quote Event, Quote Cancel Event True if the system allows only one quote for the particular market maker; false otherwise.
openCloseIndicator	Choice	Events: Simple Option Order Accepted, Options Modified, Post Trade Allocation, Options Restatement or sideDetail of Option Trade events. (When this field is present in the sideDetails of an options trade event, it is applicable only when the side of the trade is an order) Indicates the position of the order. Allowed Values: Open Close Unspecified
optionID	Text (40)	Reference Data: Simple Option Series Dictionary Entries, Complex Option Dictionary Entries Events: All events for Options Exchanges The unique ID assigned to this option by the reporter. None of any two simple/complex/flex options should receive the same ID.
orderAttributes	Name/Value Pairs	Events: Order Accepted, Order Modified, Order Restatement, Simple Option Order Accepted, Complex Option Order Accepted, Complex Option Order Modified, Stock Leg Order, Option Order Modified, Complex Order Modified, Stock Leg Modified, Option Order Restatement The order attributes field is a way to provide attributes of an order that are not necessarily the same as handling instructions. For example, the rank price of an order, or the participant with the best bid. Allowed Values RNKP Rank Price - requires a Price value, representing the price used to rank the order in the book (e.g., RNKP=10.25). NBBPAR Participant at the best bid - requires a Participant ID, representing the participant at the best bid (e.g, NBBPAR=Par1) NBOPAR Participant at the best offer - requires a Participant ID, representing the participant at the best bid (e.g, NBOPAR=Par1) PairedOrderId Requires Text(40). In addition to the standard Text data type restrictions, Participants should avoid using the "at symbol," @ (ASCII decimal 64, hex 40). Participant-provided value that that will be present on the OOA, OCOA, OOM and OCOM events that are part of a

Field Name	Data Type	Description														
		customer-submitted cross order. The pairedOrderId must uniquely identify the paired orders within the Trade Date and Exchange.														
		Allowed Values: Cboe Legacy (C1) Only <i>active 3/29/2019 – 10/4/2019</i>														
		MPID Market participant ID, requires an alphanumeric(8) value. (e.g., MPID=A12345)														
		MeetExchangeID Meet Exchange ID, requires a text(8) value. (e.g., MeetExchangeID=B76543)														
		Branch Branch ID, requires a alphanumeric(8) value. (e.g., Branch=ABCD5)														
		BranchSeqNbr The branch sequence number, requires an integer(10) value. (e.g., BranchSeqNbr=500321)														
		CorrespFirm The corresponding firm, requires an alphanumeric(8) value. (e.g., CorrespFirm=987765B)														
		UserID The user ID. Requires a text(8) value. (e.g., UserID=4321A)														
		Extensions Order Extensions. Requires a text(256) value.														
		NBBOProtection Specifies if the order is NBBO protected. Requires a Boolean value from one of the following choices: true, false. (e.g., NBBOProtection=false).														
		Allowed Values: Cboe														
		AckSubLiquidity This is a subset of the SubLiquidity values. Better prices are offered (in some cases) if an order is at the NBBO. This tells the member on order entry if their order did that. Requires a choice value (e.g., AckSubLiquidity=N) from the following list: <table><tr><td>N</td><td>Normal</td></tr><tr><td>S</td><td>Setter</td></tr><tr><td>J</td><td>Joiner</td></tr><tr><td>r</td><td>Persisted (GTC restatement)</td></tr><tr><td>U</td><td>Turner</td></tr><tr><td>B</td><td>Bolt</td></tr></table>	N	Normal	S	Setter	J	Joiner	r	Persisted (GTC restatement)	U	Turner	B	Bolt		
N	Normal															
S	Setter															
J	Joiner															
r	Persisted (GTC restatement)															
U	Turner															
B	Bolt															
		AddLiquidityOnly Values used for "Post Only" orders. Requires a choice value (e.g., AddLiquidityOnly=A) from the following list: <table><tr><td>A</td><td>Add only, don't remove liquidity</td></tr><tr><td>B</td><td>Bypass removing hidden peg</td></tr><tr><td>R</td><td>Allow removal</td></tr><tr><td>L</td><td>don't remove at limit</td></tr></table>	A	Add only, don't remove liquidity	B	Bypass removing hidden peg	R	Allow removal	L	don't remove at limit						
A	Add only, don't remove liquidity															
B	Bypass removing hidden peg															
R	Allow removal															
L	don't remove at limit															
		AllowPriceSlide Describes what to do with an order if it locks/crosses with the NBBO. Requires a choice value (e.g., AllowSidePrice=M) from the following list: <table><tr><td>S</td><td>allow slide and nerf</td></tr><tr><td>R</td><td>no nerf and no slide</td></tr><tr><td>L</td><td>allow slide no nerf</td></tr><tr><td>P</td><td>price adjust</td></tr><tr><td>m</td><td>multiple price adjust</td></tr><tr><td>M</td><td>slide nerf unnerf when possible</td></tr><tr><td>H</td><td>hide not slide</td></tr></table>	S	allow slide and nerf	R	no nerf and no slide	L	allow slide no nerf	P	price adjust	m	multiple price adjust	M	slide nerf unnerf when possible	H	hide not slide
S	allow slide and nerf															
R	no nerf and no slide															
L	allow slide no nerf															
P	price adjust															
m	multiple price adjust															
M	slide nerf unnerf when possible															
H	hide not slide															

Field Name	Data Type	Description
		N don't re-scrape book at limit D Slide Price E Slide Price but no Nerf X Don't Slide Don't Reject C Bolt but no NerfK Cancel Back B Bolt AuctionType Auction type, used for fee purposes. Requires a choice value (e.g., AuctionType=H) from the following list: O open C close H halt I IPO N none G GTHOpen V Volatility U ClosingCross P Position Compression Cross (PCC) R Related Futures Cross (RFC) BookLiquidity Signifies whether the order is being added to the book. Requires a choice value from the following list: A Booked R Not Booked X Routed B Booked Remainder Q Wait C Auction P RemovedPending DeltaRefPrice The value of the underlying as known by the submitter of the order. (Optionally present on a DAC order). Accepts a price value. DeltaValue The multiplier applied to the difference between the referencePrice and the closing price of the option's underlying value (specified per leg in the case of a complex order). (Optionally present on a DAC order). Accepts a value from -1.0000 to 1.0000. Display Display. Requires a choice value (e.g., Display=V) from the following list: V visible I invisible Executable Further describes the status of an order if it is/ is not yet live or executable. Can be updated with a modify event. Requires a choice value (e.g. Executable=W) from the following list: E order is executable P order is route pending W order in a wait state O open auction MOO/LOO/LLOO + pre-open RHO C close auction MOC/LOC/LLOC U queued

Field Name	Data Type	Description
		T order is stop pending S suspended Q non executable visible quote D pending queued I Periodic Auction A Step Up b BAM Auction c COA (Options only - Complex Order Auction - order is not currently executable as auction is not complete) q QCC f FOA – Flex Order Auction s SAMAUction u Closing Cross F Floor L Floor Local p Position Compression Cross (PCC) r Related Futures Cross (RFC) MODR Modify reason, requires a choice value (e.g., MODR=+) from the following list: (Note that in this list the acceptable values are surrounded by quotes because the list contains non alphanumeric values) 'P' peg adjustment 'C' Cboe Market Close '+' price was un-slid 'L' liquidity flag was changed (resting order routed away or fully delivered) 'R' user reduce (no loss of priority) 'D' adjustment of discretion price ONLY no loss in priority (midpoint discretionary peg orders) 'U' user other '.' an external NBBO change (sip) caused some sort of change in the order '^' Reroute (order lifted from book to reroute) 'B' un-bolt OR bolt-expire 'W' wash 'T' wait order '! reload of displaySize and loss of priority 'K' working price slid back to display price due to another market locking our protected quote 'S' stop order 'A' order routed away due to ROOC e.g. a few minutes before an open/close/ipo/halt auction 'E' sweep SWPA or SWPB order after route plan has been developed '@' Trading At Last 'X' Executable Status 'Y' Recovery 'F' Floor Order

Field Name	Data Type	Description
		'2' Clearing Failure 'r' FloorUserCanceled 'q' FloorEquityLegMatch PriceType Types or Prices. Allowed Values: Unspecified Cabinet SubCabinet CashSpread DeltaAdjust (for Delta Adjust at Close order types) PWASH Prevent wash, more information about wash prevention. Requires a choice value (e.g., PWASH=P) from the following list: N do not prevent (none) F prevent same firm match C prevent clearing firm match P prevent port-owner match REJA Reject action, provides further information on action if the order can't be executed on entry. Requires a choice value (e.g., REJA=W) from the following list: O outbound R reject Z BZX only J BYX only N NASDAQ only A ARCA only C NSX only M CHX only X PHLX only K BEX only E ISE only U AMEX only D EDGA only G EDGX only Y NYSE only T TRACO only L FLOW only W CBSX only V DATA only H CTWO only S NOBX only F MIAX only g GMNI only r Dark Reject a Dark Auto x Dark Self Cross P Periodic t Wait p Primary Only

Field Name	Data Type	Description
		b BXE Only c CXE Only q TRQX Only h XHFT Only I CboeSelect e PERL Only m MERC Only i IEX Only d EMLD Only I LTSE
		REROUTE Reroute, specifies whether or not we can reroute an order (route it a second time after it has been booked), if the NBBO goes locked or crossed. Requires a choice value (e.g. REROUTE=N) from the following list: N none L onLock C onCross K onLockOddLot
		RESTA Resting action, specifies whether this order will go onto the Cboe book or be routed away to post on somebody else's book. Requires a choice value (e.g., RESTA=I) from the following list: I Integrated, will rest on the Cboe book (though may not be resting at the point of the OA if it is a routed order, may never rest if it is a routed IOC) A PostAway, will rest on another exchange's book, looking like a routed order that hasn't come back to Cboe D Dark E Expose T Stepup F Floor
		ROUTESTRAT The route strategy used internally in the Cboe system. Requires a choice value (e.g., ROUTESTRAT=O) from the following list: O default, let the router select the strategy F failover strategy for use when the router has a NoQuote condition L legacy (emulate the behavior of the old router) C cycle (sequentially route walking depth of book) K dark liquidity scan T toggle (causes the router to cycle through various other strategies on a per-order basis) B ParT (Parallel Top) S ParD (Parallel Depth), exhaust price level before proceeding 2 Par2D (Parallel Depth including multiple price levels) M Slim (predefined set of markets, DRT and then ALL) m SlimPlus (Slim, but send to BYX before scraping

Field Name	Data Type	Description
		the local book) R Trim, scrape local book on way in (predefined set of markets, DRT, and then another predefined set of markets) r Trim, but don't scrape local book on way in P Trim2 p Trim2, but don't scrape local book on way in Q Trim3 q Trim 3, but don't scrape local book on way in G MidPoint routing b SWEEPB (Route to market centers to remove least amount of protected quote shares so order can post. No executions occur is order size too small to completely remove all protected quotes) i Book + IOC/(Day effective 10/21/14) Nasdaq t Book + DRT + IOC/(Day effective 10/17/14) NYSE x Book + IOC/(Day effective 10/17/14) NYSE f Book + IOC LavaFlow a ISO Sweep of all protected markets (similar to CboeParallel T) o ROBB c ROCO I ROUC Z RMPT z IOCM u Dark lit W Lit sweep D Directed A ALLB N CLNK RTLM Route to listing market, specifies whether the order can be routed to the opening auction, the closing auction, or both on the listing exchange. Requires a choice value (e.g., RTLM=O) from the following list: N none O only on the open C only on the close B both (on the open or close) H Halt Allowed Values: BOX ST Requires a choice from the following list: InOrderBook Executed Exposed ToOla Directed CancelPending

Field Name	Data Type	Description
		TraderCanceled EliminatedOutOfLimit EliminatedByCircuitBreaker EliminatedOnDisconnection EliminatedByMarketControl EliminatedDueToUnpricedLeg EliminatedDueToTradingRestriction CanceledBySupervisor Received EliminatedDueToTradeLimitExceeded EliminatedDueToTradeActivityLimitExceeded EliminatedDueToMaximumNbTriggersLimitExceeded EliminatedDueToDrillThroughProtection
		Allowed Values: CHX SettlementType Requires a choice value (e.g., SettlementType=0) from the following list: 0 REG - Regular Way 1 CASH - Cash 2 NXT - Next Day 3 T+2 - Trade Date + 2 4 T+3 - Trade Date + 3 5 T+4 - Trade Date + 4 6 FUT - Future 7 WI - When and If Issued 8 SO - Sellers Option 9 T+5 - Trade Date + 5 S SLR - Settlement Days FutureSettlementDate Requires value (e.g., FutureSettlementDate=YYYYMMDD) when SettlementType is 6 or S. Value is a date in format YYYYMMDD. FutureSettlementDays Requires value (e.g., FutureSettlementDays=4) when settlementType is S. Value is an integer. It is the number of settlement days. ExpireSeconds Requires value (e.g., ExpireSeconds=3) when timeInForce is GFS. Value is an integer. It is the number seconds for the good-till-seconds order. ExpireDate Requires value (e.g., ExpireDate=YYYYMMDD) when timeInForce code is GTD. Value is an integer. It is the date for the good-till-date order. PegDiff Requires value (e.g., PegDiff=2) for SNAP Auction market peg order. Value is an integer. It is the number of ticks for the symbol. CancelOnSNAPAuctionFlag Requires value (e.g., CancelOnSNAPAuctionFlag=Y) for an order. Y When a SNAP Auction is invoked, the order will not participate in the SNAP Auction N When a SNAP Auction is invoked, the order will participate in the SNAP Auction

Field Name	Data Type	Description
		SNAPMinExecRequiredFlag Requires value (e.g., SNAPMinExecRequiredFlag=Y) for a SNAP Auction order. Y Minimum SNAP Auction threshold required N Minimum SNAP Auction threshold not required SNAPConvertToAOOFlag Requires value (e.g., SNAPConvertToAOOFlag=Y) for a SNAP Auction order. Y Convert to SNAP Auction Only Order if a SNAP Auction has already started by another order. N Cancel Order if a SNAP Auction has already started by another order. SNAPAOOOneAndDoneFlag Requires value (e.g., SNAPAOOOneAndDoneFlag=Y) for a SNAP Auction order. Y SNAP Auction Only Order will only participate in one SNAP Auction, then it will be canceled. N SNAP Auction Only Order will participate in every SNAP Auction. CreationTimestamp Requires value when the eventTimestamp is different from the creation timestamp. (e.g., CreationTimestamp=20180415T143055.123456789) SNAPAuctionOrder Requires a choice value (e.g., SNAPAuctionOrder=s) from the following list: s SNAP Auction Order. Order used to potentially initiate a SNAP Auction. Allowed Values: NYSE Options STP Reserve BOLD Exposed Covered Allowed Values: NYSE Equities STP SelfTrade Part of back processing only for trade dates 3/29/2019 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19. Reserve QOrder SOrder BOrder YGOrder RMO BrokerOrder ProactiveIns MinQty Requires Unsigned value (e.g., MinQty=1000) MFS <MinQty>; Requires Unsigned value (e.g., MFS=1000) PriceOffset <Price_offset>; Requires Price value (e.g., PriceOffset=0.01) MinTriggerSize <OppSideMinSizeTriggerValue>; Requires Unsigned

Field Name	Data Type	Description
		value (e.g., MinTriggerSize=1000) MinPegSize <MinPegSize>; Requires Unsigned value (e.g., MinPegSize=1000) MaxDiscVol <MaxDiscVol>; Requires Unsigned value (e.g., MaxDiscVol=1000) CeilingFloorPrice <Peg_Price> ; Requires Price value (e.g., CeilingFloorPrice=0.01) DiscPriceRange <disc_price_range>; Requires Price value (e.g., DiscPriceRange=0.01) TypeOfInterest Requires a choicevalue from the following list: DOTR CO EQAA EQBB EQDA EQDB EQGA RQGB SQAA SQBB SQDA SQDB DSQCC SQDC Allowed Values: IEX RoutingStrategy Allowed values from the following list: u Router s Router Basic MinQtyInstruction Allowed values from the following list: C Composite M Minimum Execution Size with Cancel Remaining A Minimum Execution Size with AON Remaining AntiInternalizationGroupId Used for wash trade prevention. Allowed any two alphanumeric characters or the two-character string "--". [A-Za-z0-9][A-Za-z0-9] Depending upon the value used, these will be used to identify orders which have elected to not trade with identically marked orders from the same firm. The lower case and upper case characters are two distinct values. For example, "a1" and "A1" will be two distinct values. "--" Represents free to trade with anyone. AIQ (Anti-Internalization Qualifier) Allowed Values from the following list: CO Cancel Older order (existing value) CN Cancel Newest Order CB Cancel Both Orders CS Cancel Smallest Orders DL Decrement Larger Order

Field Name	Data Type	Description
		Allowed Values: NASDAQ – NOBO, PHLX, NOM, ISE, GEMX, MRX Persist Boolean PrimarySide Boolean PrivateReference Text<20> BrokerText Text<6> BranchSeqNum Text<20> Text Text<64> FloorBrk Text<6> Tag1AcctId Text<32> tag1AcctId Text<32> - Part of back processing only for trade dates 3/29/2019 to 6/21/19. This value was accepted between the processing dates of 7/26/19 to 8/30/19. CrossCLOrderId Text<64> CrossOrderId Text<64> StortSaleInd Value must be on of the following 1 SHORT SALE 2 SHORT SALE EXEMPT StockCapacity Value must be one of the following 1 Agent 2 Principal 3 Riskless Principal Allowed Values: NASDAQ – BX, PSX, NSDQ CrossType Value must be one of the following 0 None 1 Open 2 Halt 3 Close 4 Pause 5 Supplemental 6 Retail CustomerType Value must be one of the following 1 Retail Designated 2 Non Retail Designated Allowed Values: LTSE AntiInternalizationGroupId Used for wash trade prevention. Allowed any two alphanumeric characters or the two-character string "--". Depending upon the value used, these will be used to identify orders which have elected to not trade with identically marked orders from the same firm. The alphanumeric characters are distinct values. "--" represents free to trade with anyone. Allowed Values: MEMX RDM Reserve Display Method 1 Initial

Field Name	Data Type	Description
		3 Randomized by Size (e.g. RDM=3) RRT Reserve Replenishment Time - Replenishment time: 1 Immediate 2 Random (e.g. RRT=1) RPF RePrice Frequency: 0 Single Reprice 2 Continuous (e.g. RPF=0) RBH Reprice Behavior: 1 RepriceLockCancelCross 2 RepriceLockRepriceCross (e.g. RBH=1) STP Self Trade Prevention; Requires a choice value (e.g., STP=0) from the following list: 0 CancelNewest 1 CancelOldest 2 DecrementAndCancel 3 CancelBoth 4 CancelSmallest Allowed Values: MIAX PEARL Equities STP Self Trade Protection; Requires a choice value (e.g., STP=1) from the following list: 1 N/A 2 STP Cancel Newest 3 STP Cancel Oldest 4 STP Cancel Both 5 STP Decrement and Cancel Display Requires a choice value (e.g., Display =1) from the following list: 1 All or part of the order can be displayed 0 The order can never be displayed PriceSlide Requires a choice value (e.g., PriceSlide =2) from the following list: 1 N/A 2 NoPriceSliding 3 Once 4 OnceButCancelIfCrossedAtEntry 5 MultipleTimes Attributable Requires a choice value (e.g., Attributable=3) from the following list: 1 NotAttributable 2 AttributedToFirmMpid 3 AttributedToRetail
orderID	Text (40)	Events: Order Accepted, Route, Modified, Canceled, Trade (sideDetails), Fill, Cancel Route, Modify Route and Restatement events, Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Route, Option Order Modified, Complex Option Order Modified, Option Order Canceled, Modify Option Route, Option Cancel Route, Simple Option Trade, Stock Leg Fill, Option Order Restatement and Options Post Trade

Field Name	Data Type	Description																																										
		Allocation events The internal order ID assigned to the order by the exchange.																																										
orderType	Choice	Events: Order Accepted, Order Routed, Order Modified, Order Restatement, Order Modify Route, Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Order Modified, Complex Option Order Modified, Option Route, Option Order Restatement, Modify Option Route events The order type defines the type of order being placed, and must be exactly one of the permitted values. Some values are exchange specific. This document details the technical specifications for what is reported in this field, not necessarily how to determine what value to be included in each report. See the CAT website for exchange-specific guidance on how to determine which values to use for reporting specific orders. Allowed Values: <table><tr><td>AMPEG</td><td>Alt Midpoint Peg - pegs to less aggressive of midpoint or 1 tick inside the NBBO</td></tr><tr><td>CAB</td><td>Cabinet</td></tr><tr><td>LMT</td><td>Limit</td></tr><tr><td>LOB</td><td>Limit or Better</td></tr><tr><td>LOC</td><td>Limit on Close</td></tr><tr><td>LOO</td><td>Limit on Open</td></tr><tr><td>MIT</td><td>Market If Touched</td></tr><tr><td>MKT</td><td>Market</td></tr><tr><td>MOC</td><td>Market on Close</td></tr><tr><td>MOO</td><td>Market on Open</td></tr><tr><td>MDPEG</td><td>Midpoint Discretionary Peg - a primary peg, but has discretion to the midpoint of the NBBO</td></tr><tr><td>MPEG</td><td>Midpoint Peg</td></tr><tr><td>MMPEG</td><td>Market Maker Peg - will peg at 8%, 20%, or 28% of the NBBO depending on symbol and time of day (follows the LULD bands). Designed to allow MMs to satisfy their quoting obligations without stub orders</td></tr><tr><td>PPEG</td><td>Primary Peg</td></tr><tr><td>RPEG</td><td>Market Peg</td></tr><tr><td>RTPEG</td><td>Route Peg - Non-displayed primary peg order that only interacts with orders that are about to be routed out with size <= peg order size</td></tr><tr><td>SOL</td><td>Solicitation</td></tr><tr><td>STL</td><td>Stop Limit</td></tr><tr><td>STP</td><td>Stop</td></tr></table> Allowed Values: NYSE Options <table><tr><td>AutoMatch</td></tr><tr><td>LimitCross</td></tr></table> Allowed Values: NYSE Equities <table><tr><td>Peg</td></tr><tr><td>LimitCross</td></tr></table>	AMPEG	Alt Midpoint Peg - pegs to less aggressive of midpoint or 1 tick inside the NBBO	CAB	Cabinet	LMT	Limit	LOB	Limit or Better	LOC	Limit on Close	LOO	Limit on Open	MIT	Market If Touched	MKT	Market	MOC	Market on Close	MOO	Market on Open	MDPEG	Midpoint Discretionary Peg - a primary peg, but has discretion to the midpoint of the NBBO	MPEG	Midpoint Peg	MMPEG	Market Maker Peg - will peg at 8%, 20%, or 28% of the NBBO depending on symbol and time of day (follows the LULD bands). Designed to allow MMs to satisfy their quoting obligations without stub orders	PPEG	Primary Peg	RPEG	Market Peg	RTPEG	Route Peg - Non-displayed primary peg order that only interacts with orders that are about to be routed out with size <= peg order size	SOL	Solicitation	STL	Stop Limit	STP	Stop	AutoMatch	LimitCross	Peg	LimitCross
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STP	Stop																																											
AutoMatch																																												
LimitCross																																												
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Field Name	Data Type	Description
		Allowed Values: IEX DPEG Discretionary Peg RDPEG RetailDiscretionary; discretionary Peg marked as retail order. RLP RetailLiquidityDiscretionary; discretionary Peg marked as retail liquidity provider. RMPEG RetailMidpoint; midpoint Peg marked as retail order. CDPEG CorporateDiscretionary; discretionary Peg marked as corporate buyback (10b-18). Allowed Values: MIAX PEARL Equities MidPointPegAvailWhenLocked Order is available to trade when the market is locked MidPointPegUnavailWhenLocked Order is not available to trade when the market is locked
originalOrderDate	Date	Events: Order Restatement, Option Order Restatement This field represents the most recent trading day for which the order was active. Note that this may not be the date when the order was originally accepted. If the order has been active for multiple trading days, this field must reference the most recent trading day when the order was active.
originalOrderID	Text (40)	Events: Order Modified, Order Restatement, Option Order Modified Event, Complex Option Order Modified Event, Stock Leg Modified, Option Order Restatement The most recent internal order ID before the modify / replacement created a new order ID.
originalQuoteID	Text (40)	Events: Quote Event The most recent quoteID of the existing quote before being updated or replaced.
Participant ID	Text (40)	Valid Participant ID values. Note that participants will use their Participant ID as their Reporter ID. Allowed Values BZX Cboe BZX Equities BZXOP Cboe BZX Options BYX Cboe BYX Exchange BOX BOX Options Exchange C2 Cboe C2 Options CBOE Cboe Exchange CHX NYSE CHX EDGA Cboe EDGA Exchange EDGX Cboe EDGX Equities EDGXOP Cboe EDGX Options FINRA Financial Industry Regulatory Authority GEMX Nasdaq GEMX MRX Nasdaq MRX ISE Nasdaq ISE IEX Investor's Exchange MIAMI Miami International Securities Exchange PEARL MIAX PEARL

Field Name	Data Type	Description
		EMLD MIAX Emerald BX Nasdaq BX Equities NOBO Nasdaq BX Options PHLX Nasdaq PHLX Options PSX Nasdaq PHLX Equities NSDQ The NASDAQ Stock Market NOM Nasdaq Options Market NSX NYSE National NYSE The New York Stock Exchange AMEROP NYSE American Options AMER NYSE American ARCAOP NYSE ARCA Options ARCA NYSE ARCA Equities LTSE Long Term Stock Exchange PEARLEQ MIAX PEARL Equities BSTX Boston Security Token Exchange MEMX Members Exchange
price	Price	Events: Order Accepted, Route, Modified, Modify Route or Restatement events, Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Order Modified, Complex Option Order Modified, Option Route, Modify Option Route, Option Order Restatement The limit price of the order. For a complex option, this is the net price of the order, which can be either positive, negative, or zero. Events: Order Trade, Order Fill, Trade Break, Trade Correction Trade/fill price of the trade/fill. Events: Post Trade Allocation The price of the allocation.
primaryDeliverable	Symbol	Reference Data: Simple Option Series Dictionary Entries The symbol for the primary deliverable component of the option, in the symbology of the listing exchange for that symbol. Alternatively, if a symbol dictionary is provided, a valid alias could be used.
putCall	Choice	Reference Data: Simple Option Series Dictionary Entries Specifies if this simple option or option leg is a put or call. Allowed Values Put Call
quantity	Unsigned	Events: Order Accepted, Route, Modified, Canceled, Trade, Fill, Modify Route, Order Restatement events; Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Order Modified, Complex Option Order Modified, Stock Leg Modified, Option Route, Option Order Canceled, Simple Option Trade, Stock Leg Fill, Modify Option Route, Option Order Restatement events The quantity of the order.
quoteID	Text (40)	Events: Note Event, Options Quote, Quote Cancel, and Options Trade (sideDetails) events The ID assigned to this quote by the exchange to uniquely identify the quote.
ratio	Unsigned	Reference Data: Complex Option Dictionary Entries

Field Name	Data Type	Description
		The ratio quantity of a complex option leg, relative to other legs. Ratios must already be reduced to the smallest units possible.
reason	Text (255)	Events: Trade Break, Trade Correction, Option Trade Break, Option Trade Correction, Post Trade Allocation Free format text field, with reason for the trade break or correction.
reporter	Reporter ID	Events: Note event, Self Help Declaration Reference Data: Member Dictionary Entry, Symbol Dictionary Entry and Option Series Dictionary Entry Reporter ID of the entity reporting the events or reference data.
result	Choice	Events: Order Route, Order Cancel Route, Order Modify Route; Option Route, Modify Option Route, Option Cancel Route The result of the Route, Cancel Route or Modify Route request communicated to the exchange. Allowed Values ACK Acknowledged REJ Rejected NR No Response UNSOL Unsolicited: only valid for an unsolicited cancel route
resultTimestamp	Timestamp	Events: Order Route, Order Cancel Route, Order Modify Route; Option Route, Modify Option Route, Option Cancel Route The date/time the result of Route, Modify Route, or Cancel Route request was received.
revokedTimestamp	Timestamp	Events: Self Help Declaration Date and time the self-help was revoked. If self-help is not revoked by the end of the day, this field may be left unreported or can be set to the closing time. However, another self-help event must be reported for the next day.
routedOrderID	Text (40)	Events: Order Accepted, Order Modified, Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Order Modified, Complex Option Order Modified, Stock Leg Modified The ID assigned to this order by the routing firm when submitting the order to the exchange. Events: Equity Order Modified, Equity Order Adjusted, Option Order Modified, Option Order Adjusted For the return of unexecuted liquidity previously routed away, the exchange-assigned ID used to route the order away. Events: Order Modify Route, Modify Option Route events The routedOrderID as represented in the original or most recent Route/Modify Route message sent to the routing broker.
routedOriginalOrder ID	Text (40)	Events: Order Modified, Option Order Modified, Complex Option Order Modified, Stock Leg Modified The routedOrderID for the order, as sent by the routing broker in the original route message, or the most recent modify message (in FIX OrigClOrdId, in OUCH Existing Order Token). Events: Order Modify Route, Modify Option Route events The routedOrderID as represented in the original or most recent

Field Name	Data Type	Description														
		Route/Modify Route message sent to the routing broker.														
routingParty	Text (20)	A string used to identify the entity on the other side of an accepted or route event. Events: Order Accepted, Simple Option Order Accepted, Complex Option Order Accepted In the events above, this is the unique identifier for the firm that sent the order to the exchange. Events: Order Route, Order Fill, Order Modify Route, Order Cancel Route, Option Route, Modify Option Route, Option Cancel Route In the events above, this is the firm to which the exchange routed the order. Events: Order Modified, Order Adjusted, Complex Order Modified, Complex Order Adjusted In the events above, this value can be either the customer that sent the order to the exchange or the firm to which the exchange routed the order. When the initiator value is Firm or Market Maker, report the unique identifier for the firm that sent the order to the exchange. When the initiator value is Exchange and the event represents routed quantity returned unexecuted, report the firm to which the exchange routed the order.														
saleCondition	Text (8)	Events: Order Trade, Order Fill, Trade Correction, Simple Option Trade, Stock Leg Fill, Option Trade Correction Indicates a special condition under which a trade was reported. The first character must be either 'E' or 'O' indicating whether the following characters are to be interpreted as OPRA sale condition codes for options or UTP/CTS sale condition codes for equities. 'E' stands for the UTP/CTS, while 'O' stands for the OPRA. The following characters will use the single-character codes as defined in the OPRA, UTP, and CTS specifications - one character code for as many conditions as apply. Note that the <space> character is a valid code. Allowed Values: Second character if first character is O (OPRA Values) <i>effective through 11/1/2019</i> <table><tr><td>blank</td><td>Indicates that the transaction was a regular sale and was made without stated conditions</td></tr><tr><td>A</td><td>Transaction previously reported (other than as the last or opening report for the particular option contract) is not to be canceled</td></tr><tr><td>B</td><td>Transaction is being reported late and is out of sequence, i.e. later transactions have been reported for the particular option contract.</td></tr><tr><td>C</td><td>Transaction is the last reported for the particular option contract and is now canceled.</td></tr><tr><td>D</td><td>Transaction is being reported late, but is in the correct sequence, i.e. no later transactions have been reported for the particular option contract.</td></tr><tr><td>E</td><td>Transaction was the first one (opening) reported for this day for the particular option contract. Although later transactions have been reported, this transaction is not to be canceled.</td></tr><tr><td>F</td><td>Transaction is a late report of the opening trade and is out of sequence: i.e. other transactions have been reported for the</td></tr></table>	blank	Indicates that the transaction was a regular sale and was made without stated conditions	A	Transaction previously reported (other than as the last or opening report for the particular option contract) is not to be canceled	B	Transaction is being reported late and is out of sequence, i.e. later transactions have been reported for the particular option contract.	C	Transaction is the last reported for the particular option contract and is now canceled.	D	Transaction is being reported late, but is in the correct sequence, i.e. no later transactions have been reported for the particular option contract.	E	Transaction was the first one (opening) reported for this day for the particular option contract. Although later transactions have been reported, this transaction is not to be canceled.	F	Transaction is a late report of the opening trade and is out of sequence: i.e. other transactions have been reported for the
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F	Transaction is a late report of the opening trade and is out of sequence: i.e. other transactions have been reported for the															

Field Name	Data Type	Description
		particular option contract. G Transaction was the only one reported this day for the particular option contract and is now to be canceled H Transaction is a late report of the opening trade, but is in the correct sequence, i.e., no other transactions have been reported for this particular option contract. I Transaction was executed electronically. This prefix appears solely for information; process as a regular transaction. J Transaction is a reopening of an option contract in which trading has been previously halted. This prefix appears solely for information; process as a regular transaction. K Transaction is an option contract for which the terms have been adjusted to reflect a stock dividend, stock split, or similar event. This prefix appears solely for information; process as a regular transaction. L Transaction represents a trade in two options in the same option class (a buy and sell in the same class). This prefix appears solely for information; process as a regular transaction. M Transaction represents a trade in two options in the same option class (a buy and sell in a put and a call). This prefix appears solely for information; process as a regular transaction N Transaction is the execution of a sale at a price agreed upon by the floor personnel involved, where a condition of the trade is that it be reported following a non-stopped trade of the same series at the same price. O Cancel stopped transaction P Transaction represents the option portion of an order involving a single option leg (buy or sell of a call or put) and stock. The prefix appears solely for information; process as a regular transaction. Q Transaction represents the buying of a call and the selling of a put for the same underlying stock or index. This prefix appears solely for information; process as a regular transaction R Transaction was the execution of an order that was 'stopped' at a price that did not constitute a Trade-Through on another market at the time of the stop. S Transaction was the execution of an order identified as an Intermarket Sweep Order T Transaction reflects the execution of a 'benchmark trade'. X Transaction is Trade Through Exempt. The transaction should be treated like a regular sale. Allowed Values: Second character if first character is O (OPRA Values) effective beginning 11/4/2019 blank Indicates that the transaction was a regular sale and was made without stated conditions. A Transaction previously reported (other than as the last or opening report for the particular option contract) is now to be canceled. B Transaction is being reported late and is out of sequence; i.e., later transactions have been reported for the particular option contract. C Transaction is the last reported for the particular option

Field Name	Data Type	Description
		contract and is now canceled.
	D	Transaction is being reported late, but is in the correct sequence; i.e., no later transactions have been reported for the particular option contract.
	E	Transaction was the first one (opening) reported this day for the particular option contract. Although later transactions have been reported, this transaction is now to be canceled.
	F	Transaction is a late report of the opening trade and is out of sequence; i.e., other transactions have been reported for the particular option contract.
	G	Transaction was the only one reported this day for the particular option contract and is now to be canceled.
	H	Transaction is a late report of the opening trade, but is in the correct sequence; i.e., no other transactions have been reported for the particular option contract.
	I	Transaction was executed electronically. Prefix appears solely for information; process as a regular transaction.
	J	Transaction is a reopening of an option contract in which trading has been previously halted. Prefix appears solely for information; process as a regular transaction.
	S	Transaction was the execution of an order identified as an Intermarket Sweep Order. Process like normal transaction.
	a	Transaction was the execution of an electronic order which was "stopped" at a price and traded in a two sided auction mechanism that goes through an exposure period. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism.
	b	Transaction was the execution of an Intermarket Sweep electronic order which was "stopped" at a price and traded in a two sided auction mechanism that goes through an exposure period. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism marked as ISO.
	c	Transaction was the execution of an electronic order which was "stopped" at a price and traded in a two sided crossing mechanism that does not go through an exposure period. Such crossing mechanisms include and not limited to Customer to Customer Cross and QCC with a single option leg.
	d	Transaction was the execution of an Intermarket Sweep electronic order which was "stopped" at a price and traded in a two sided crossing mechanism that does not go through an exposure period. Such crossing mechanisms include and not limited to Customer to Customer Cross.
	e	Transaction represents a non-electronic trade executed on a trading floor. Execution of Paired and Non-Paired Auctions and Cross orders on an exchange floor are also included in this category.
	f	Transaction represents an electronic execution of a multi leg order traded in a complex order book
	g	Transaction was the execution of an electronic multi leg order which was "stopped" at a price and traded in a two sided auction mechanism that goes through an exposure period in a complex order book. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism.
	h	Transaction was the execution of an electronic multi leg order

Field Name	Data Type	Description
		which was “stopped” at a price and traded in a two sided crossing mechanism that does not go through an exposure period. Such crossing mechanisms include and not limited to Customer to Customer Cross and QCC with two or more options legs. i Transaction represents a non-electronic multi leg order trade executed against other multi-leg order(s) on a trading floor. Execution of Paired and Non-Paired Auctions and Cross orders on an exchange floor are also included in this category. j Transaction represents an electronic execution of a multi Leg order traded against single leg orders/ quotes. k Transaction was the execution of an electronic multi leg stock/options order which was “stopped” at a price and traded in a two sided auction mechanism that goes through an exposure period in a complex order book. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism. l Transaction was the execution of an electronic multi leg order which was “stopped” at a price and traded in a two sided auction mechanism that goes through an exposure period and trades against single leg orders/ quotes. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism. m Transaction represents a non-electronic multi leg order trade executed on a trading floor against single leg orders/ quotes. Execution of Paired and Non-Paired Auctions on an exchange floor are also included in this category. n Transaction represents an electronic execution of a multi leg stock/options order traded in a complex order book. o Transaction was the execution of an electronic multi leg stock/options order which was “stopped” at a price and traded in a two sided crossing mechanism that does not go through an exposure period. Such crossing mechanisms include and not limited to Customer to Customer Cross. p Transaction represents a non-electronic multi leg order stock/options trade executed on a trading floor in a Complex order book. Execution of Paired and Non-Paired Auctions and Cross orders on an exchange floor are also included in this category. q Transaction represents an electronic execution of a multi Leg stock/options order traded against single leg orders/ quotes. r Transaction was the execution of an electronic multi leg stock/options order which was “stopped” at a price and traded in a two sided auction mechanism that goes through an exposure period and trades against single leg orders/ quotes. Such auctions mechanisms include and not limited to Price Improvement, Facilitation or Solicitation Mechanism. s Transaction represents a non-electronic multi leg stock/options order trade executed on a trading floor against single leg orders/ quotes. Execution of Paired and Non-Paired Auctions on an exchange floor are also included in this category. t Transaction represents execution of a proprietary product non-electronic multi leg order with at least 3 legs. The trade price may be outside the current NBBO. Allowed Values: Second character if first character is E (UTP and CTS

Field Name	Data Type	Description
		Values) @ Regular Sale blank No Sale Condition required within the category it appears (Long Trade Format Only) A Acquisition B Bunched Trade or Average Price Trade C Cash Sale D Distribution E Automatic Execution F Intermarket Sweep G Bunched Sold Trade H Price Variation Trade I Odd Lot Trade K Rule 155 Trade (AMEX) L Sold Last M Market Center Official Close N Next Day Trade (Next Day Clearing) O Opening Prints / Market Center Opening Trade P Prior Reference Price Q Market Center Official Open R Seller S Split Trade T Form T (Extended Hours Trade) U Extended Trading Hours (Sold Out of Sequence) V Contingent Trade W Average Price Trade X Cross Trade Y Yellow Flag Regular Trade Z Sold (out of Sequence) 1 Stopped Stock (Regular Trade) 4 Derivatively Priced 5 Re-Opening Prints (Market Center Reopening Trade) 6 Closing Prints (Market Center Closing Trade) 7 Qualified Contingent Trade (QCT) 8 Placeholder for 611 Exempt 9 Corrected Consolidated Close (per listing market)
sellDetails	Order Trade Side Details	Events: Order Trade, Trade Correction, Simple Option Trade, Option Trade Correction Information for the sell side of the trade. Format and element definitions for sellDetails are described in sideTradeEvent in section 4.5.
sentTimestamp	Timestamp	Events: Quote Event, Quote Cancel Event The date/time when the market maker sent the quote or quote cancel to the exchange.
sequenceNumber	Unsigned	Events: All Stock Exchange Events, All Options Exchange Events The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps. The sequence number is required to be strictly increasing for a given

Field Name	Data Type	Description
		reporter, date, and symbol, and can be used to sort each event in chronological order where multiple events have the same timestamp. For more detail, please refer to section 3.1: Timestamps and Sequence Numbers.
session	Text (40)	Events: Order Accepted, Order Route, Order Modified, Order Adjusted, Order Fill, Order Cancel Route, Order Modify Route, Simple Option Order Accepted, Complex Option Order Accepted, Complex Option Order Modified, Complex Option Order Adjusted, Option Route, Modify Option Route, Option Cancel Route The name/ID of the session being used to send the order (from the routing firm to the exchange, or from the exchange to the routing broker). If this event represents a leg of a complex order, the Session must be the same as reported in the parent complex order. For modification and adjustment events, the value is for the firm that routed to the exchange when the initiator is Firm or Market Maker. When the initiator is Exchange and the event represents routed liquidity returned unexecuted, then the value is what the exchange used to route the order away.
settlement	Choice	Reference Data: Simple Option Series Dictionary Entry Specifies the settlement of option in Simple Option Series Dictionary Entries. Allowed Values AM At the open PM At the close Asian European/PM settlement, but the exercise settlement value is the arithmetic average of the closing prices of the underlying index on 12 pre-determined, consecutive monthly observation dates. Cliquet European/PM settlement, but the exercise settlement value is the greater of zero, or [(closing price of the underlying index on the initial trade date) * (sum of the monthly capped returns)] + strike price.
side	Choice	Reference Data: Complex Option Dictionary Entry Events: Order Accepted, Order Route, Order Trade, Order Fill, Order Restatement, Trade Correction, Simple Option Order Accepted, Complex Option Order Accepted, Stock Leg Order, Option Route, Option Trade, Stock Leg Fill, Post Trade Allocation Side of the event. Note that AsDirected and Opposite are only used for complex option order accepted events. Allowed Values Buy Sell Short Exempt Cross CrossExempt CrossShort CrossShortExempt AsDirected

Field Name	Data Type	Description
		Opposite
status	Choice	Reference Data: Member Dictionary Entry The status of the member on the reporting date. Allowed Values Active An active member of the SRO (ID must be CRD) Inactive An inactive member of the SRO (ID must be CRD) NonMember An entity that is not a member of the SRO. For example, if the routing broker dealer is not a member of the exchange, it would be listed here (ID must be CRD). Internal Some internal part of the SRO system (a utility or facility) which will be used in reportable events. In this case, the ID must have been a pre-registered with CAT via the web GUI. Other Another entity (e.g., foreign firm) without a CRD number. In this case, the ID must have been pre-registered with CAT via the web GUI.
statusTime	Timestamp	Time of change in market maker's status. If one record for a member alias and symbol combination is provided, it is assumed to be active for the entire day. For market making initiations not at the open, provide the start time
strikePrice	Numeric(10, 8)	Reference Data: Simple Option Series Dictionary Entry In Simple Option Series Dictionary Entries, this field is the pre-arranged transaction price if the option is exercised. Note that if option kind = FLEXPCT, this will be the percentage.
symbol	Symbol	Events: All Stock Exchange Events, All Options Stock Leg Events Reference Data: Symbol Entry, Complex Option Dictionary Entry The stock symbol. Note that for all events of stock exchange, or options stock leg related events, this field may be in either the symbology of the listing exchange, or the reporter's symbology mapping as appropriate. However, in Symbol Entry, or stock leg of Complex Option Dictionary entry, this must be in the symbology of the listing exchange.
symbolAliases	Array of Symbol Alias	Reference Data: Symbol Dictionary Entry A list of symbol aliases for a listed symbol. Using an alias allows a reporter to submit events using the symbol in their own format rather than the symbology of the listed exchange.
Symbol Entry Pairs	Name/Value Pairs	This is a data type. Currently, this data type must be used for the field "attributes" found in the reference data element: Symbol Entry. Allowed Values TPG Tick Pilot Group (Choice) - requires one of the defined values (e.g., TPG=TG2) from the following list: CTRL Control Group TG1 Test Group 1 TG2 Test Group 2 TG3 Test Group 3
test	Boolean	Reference Data: Symbol Entry Indicates whether the symbol is a "test" symbol used for testing production systems.

Field Name	Data Type	Description
timeInForce	Choice	Events: Order Accepted, Order Route, Order Modified, Order Modify Route, Order Restatement, Simple Option Order Accepted, Complex Option Order Accepted, Complex Option Order Modified, Stock Leg Order, Option Order Modified, Option Route, Modify Option Route, Option Order Restatement Specifies the Time-In-Force for an order. Supported TIF values are listed below.
		Allowed Values
		AOK Auction or Kill
		CLO At the Close
		DAY A day order
		IOC Immediate or Cancel
		GTC Good till Canceled
		GTT Good till Time (requires XTIME in handlingInstructions)
		GTD Good till Date
		GTX Good till Crossing
		FOK Fill or Kill
		OPG At the Open
		REG Regular Hours Only
		WCO While Connected
		Allowed Values: Cboe
		EXT Extended Day
		Allowed Values:CHX
		AOO Auction-only order
		GFS Good for Seconds
		Allowed Values: IEX
		SYS System Hours
		EXT Day + Extended Hours
		Allowed Values: NASDAQ Equities
		EXT Extended Days
		OPG On Open
		CLO On Close
		Allowed Values: MIAX
SAO SettlementAuctionOnly		
Allowed Values: LTSE		
SYS System Session (“SYS”). Orders entered into the System marked SYS may trade during System Hours and expire at the end of the Post-Market Session.		
tradeDate	Date	The date on which a trade occurred.
tradeID	Text (40)	Events: Order Trade, Trade Break, Trade Correction, Option Trade, Post Trade Allocation, Option Trade Break, Option Trade Correction An identifier for the trade, unique for the given exchange, date, and

Field Name	Data Type	Description
		Symbol/OptionID.
type	Message Type	Specifies the event type. General Events NOTE Note SHD Self Help Declaration STE Supplemental Trade Event Equities Events EOA Order Accepted EOR Order Route EIR Internal Order Route EOM Order Modified EOJ Order Adjusted EOC Order Canceled EOT Order Trade EOF Order Fill EBP Bulk Print ECR Order Cancel Route EMR Order Modify Route EORS Order Restatement ETB Trade Break ETC Trade Correction Options Events OQ Quote OQC Quote Cancel OOA Simple Option Order Accepted OCOA Complex Option Order Accepted OSL Stock Leg Order OOM Option Order Modified OCOM Complex Option Order Modified OSLM Stock Leg Modified OOJ Option Order Adjusted OCOJ Complex Option Order Adjusted OSLJ Stock Leg Adjusted OOC Option Order Canceled OOR Option Route OIR Internal Option Route OCIR Internal Complex Option Route OOMR Modify Option Route OOCR Option Cancel Route OT Simple Option Trade OSLF Stock Leg Fill OPTA Post Trade Allocation OORS Option Order Restatement

Field Name	Data Type	Description
		OTB Option Trade Break OTC Option Trade Correction Reference Data MDE Member Dictionary Entry CODE Complex Options Dictionary Entry OSDE Options Series Dictionary Entry MMDE Market Maker Dictionary Entry
undefinedNoteData	Name/Value Pairs	Events: Note Event A list of key/value pairs, providing machine parseable data for the notation in a Note Event. The attributes are not defined in the specs, and can be any values as long as they conform to the format for a list of name/value pairs.
underlyingType		Reference Data: Option Series Dictionary Entry This field specifies whether a simple option series has an equity or index as its underlying. The underlying type mapping is consistent with the same mapping used at OCC (e.g., ETF is treated as Equity and WCO is treated as Index). Allowed Values Equity Index
version	Version	This is a data type, not a field. Digits and decimals are the only allowed characters. The first character must be a digit group followed by any number of optional pairs of decimals and digit groups.
workingPrice	Price	Events: Order Accepted, Order Restatement, Simple Option Order Accepted, Option Order Modified, Option Order Restatement The working price of the order.

Appendix G. CATFT (fileX) Token Service instructions and examples

This section has been removed for security purposes.

Appendix H. Plan Processor Best Practices

This section has been removed for security purposes.

Appendix I. Historical Summary of Document Revisions

Version	Date	Author	Description
1.0	5/14/2017	Thesys CAT	Initial release.
1.1	6/2/2017	Thesys CAT	Incorporates feedback from version 1.0. • Various minor changes to correct typos, and make clarifications. • Sale Condition - Added the Supplemental Trade Event to provide a way for sale condition to be reported independently of the trade/fill event itself. In addition, the saleCondition in all the trade/fill events was marked as conditional. • Changed "style" to "exerciseStyle" for clarity • Changed timestamp format from UTC to Eastern (kept alternative timestamp format). • sequenceNumber changed from Required to Conditional • result and resultTimestamp changed from Required to Optional • Removed price from trade break event. Clarified definition of quantity in trade break event to allow for partial trade break. • Made buy/sell details on a trade correction optional - for simpler cases where only the price/qty are changed • Added executionTimestamp and reason as optional fields to trade correction events. • Fixed some Message Type typos and mismatches between tables. • Fixed inconsistent use of cancelReason and cancelReasonCode so all uses reference cancelReason. • Changed clearingFirm in stock leg from a validated MemberAlias to a free form Text(10) - as explained by SRO this field is received in the order from the BD and is passed thru to the firm executing the stock leg - there is no validation of this field. Also, changed to be optional. • exchOriginCode removed from complex option stock leg events • timeInForce, handlingInstructions, and orderAttributes added as conditional fields for complex option order modify event • liquidityCode is optional for option trades because some option exchanges do not track and report add/remove of liquidity. • Stock Leg Fill Event - renamed tradeID to fillID; removed quoteID; changed orderID to required; clearingFirm changes as mentioned above; clearingNumber is now optional • Post Trade Allocation - added optional fields as requested: openCloseIndicator, exchOriginCode, mktMkrSubAccount, reason • Upload directory will be the date for the events being reported • leavesQty in side details is not required when used in conjunction with a trade correction • cmtaFirm and mktMkrSubAccount are now conditional rather than optional • Modified Events - optional fields changed from optional to conditional since they are required if their value changes, and is more consistent with the definition of conditional than optional.

Version	Date	Author	Description
			Substantial updates to data dictionary, including additions to orderType, executionCodes, handlingInstructions, and orderAttributes based on SRO feedback.
1.2	6/20/2017	Thesys CAT	- Minor changes to correct typos and add clarification - Data Dictionary - reformat; address typos and inconsistencies - Add ETF to issueType; add issueType to examples - Update JSON/CSV schema - Clarified orderID for option cancel and stock leg fill - Supplemental Trade Event - side is conditional on fillID - Clarifications in feedback section - Updated tables for FINRA reporting formats: sections 6.3, C.4, and D
1.3	7/6/2017	Thesys CAT	- aliases were overloaded - separated into memberAliases and symbolAliases - Clarify Inactive status for member dictionary - Add Asian and Cliquet to option settlement - Add definition of receipt time - Add symbol and optionID to the Note Event - Option trades may not have quoteID/orderID on one or both sides of a trade - Provide JSON field names for metadata file - Call out single-line restrictions on JSON/CSV files - Clarification and examples for JSON/CSV schema and conversions - Describe the Symbol Master upload file - Updated details and diagrams for connectivity changes - Clarify definition of Record Index for feedback and correction files - Add CBOE Note Event details - Clarify support for FLEX PCT trades - Defined values for ParticipantID/ExchangeID
1.5	12/07/2017	Thesys CAT	- Optionally allow space as separator in Timestamp - XTIME requires Timestamp - Add "type" field to Metadata - Update data dictionary with SRO-assigned values - Define Symbol Alias data type - Increase length of companyName field - Add symbol market move scenarios - Corrections and clarifications to text and examples - add executionCodes to option side-trade details - Update descriptions for FINRA reported OTCBB and TRF - Add FINRA halt/resume - Clarified encoding for file submissions - Placed length limit of filename group - Increase length of fileID and origFileID for metadata

Version	Date	Author	Description
			• Add information about upcoming change in encryption process • Clarified format for hashes in metadata • Removed support for VPN access • Clarified SFTP upload procedures • Add "final" stage for file processing • Provide fileName instead of fileID for certain integrity failures • Clarification for cancelQty • Added cancelReason values for BOX, MIAX, Pearl, and CHX • Added definedNoteData values for NYSE • Added exchOriginCode values for NYSE, Bats, MIAX, and Pearl • Added executionCodes values for BOX, MIAX, CHX, and NYSE • Added general handlingInstructions, and specific ones for BOX, CHX, and NYSE, • Added liquidityCode values to support extended codes for NYSE • Added noteType values for NYSE • Added/Updated orderAttributes values for BATS, BOX, CHX, and NYSE • Added general orderType values AMPEG, LOO, MOO, MDPEG, MMPEG, RTPEG, SOL and specific values of CHX and NYSE • Changed Participant ID values for NYSE National and NYSE American • Added CrossExempt to side values • Added general timeInForce values AOK, CLO, GTX, OPG, REG, WCO and specific values for CHX • Clarified the delivery timeline for the file submission functionalities via Reporter Portal • Update FINRA OTCBB/TRF field definitions • Restrict correction records to the original fileID • Provide full equity master file to participants • Define encoding as ISO-8859-1 • Clarify underlyingType mappings • PTA event: add quoteID; clarify quoteID/orderID fields • Support complex orders in option restatement • Clarify executingBroker definition • Redefine the GROUP filename component • Indicate when finished sending a batch of files • Add complexOptionID to leg events • quoteID globally unique by reporter/date/optionID/quoteID • New upload/encryption process • Clarify initiator field definition • Modified events now require full state of order • Modify and clarify file submission process • Update Participant ID definitions
1.6	2/16/2018	Thesys CAT	• Add lifecycle keys for each event • New events: Order Adjusted, Option Order Adjusted, Complex Order Adjusted, Stock Leg Adjusted

Version	Date	Author	Description
			- Unified and clarified definitions for originalOrderID in modified, adjusted, and restatement events - Remove confusing text about a missing or empty value for the session field being used as a default value. - Updated corporate action reporting formats specified in Appendix C. - File ID no longer required in .meta file, and origFileNumber replaces origFileId for file replacement and corrections. - Reverting to the original specification, regarding the .final file. Based on SRO feedback, in version 1.7 of the input spec changes will be made to simplify the automation of file submission from the SRO perspective. - Clarify NBBO values when the NBBO may be unavailable - Ease restriction on routingFirm so it can be any text string, not just a Member Alias. - Clarify what is submitted for both JSON and CSV formats when a data field is not reported. - Correct events which were missing fields displayPrice, displayQty, and leavesQty. - Added type as first column in FINRA OTC corporate actions, TRF, OTCBB, and Halt/Resume records. - Changed type from Numeric to Unsigned in FINRA TRF and OTCBB events. - Increased max length for some text fields in daily events to make them consistent. - Time is a JSON Number
1.6.1		Thesys CAT	- Change max length of Symbol to 20. - Fix typo in NYSE Corporate Actions event. - Remove symbology and normalization feedback stages these are contained in the ingestion feedback. - Added CBOE executionCode FirmTradeTime. - Add isGloballyUnique to complex accepted event, and relax requirement on complexOptionID if the orderID is globally unique. - Add the file kinds NASDDaily, BATSDaily, NYSEDaily, and FINRADaily to the file submission process. These file kinds subsume Halt/Resume and Corporate Actions. - Add clarification of semantics of a successful file replacement.
1.7	07/24/2018	Thesys CAT	- Updates to per-SRO member dictionary values - Added member field to explicitly identify the member on orders and trades. - Clarified requirement for marking ISO orders in handlingInstruction - Added sequence number subsystem - Change routingFirm to routingParty for clarity of intent - Add Internal Route events - Add Bulk Print Event - Clarify field requirements

Version	Date	Author	Description
			• Make fields conditional regarding complex options and option legs • Remove NASD TRF • Added file submission schedule • Add refTradeID to trade correction events • Add display Qty/Price to quote events • Remove executingBroker • Add floorBroker • beginDate is optional in the expected field for symbol master updates • Update type info for amount and amountCode in NASD daily records
1.7.1	09/09/2018	Thesys CAT	• Update symbol master management • ASE is to be used only for adding a new symbol • USE is to be used for only updating fields (no longer can be used for transfer) • SMRST is for restating and/or verifying an existing symbol • SMXFR is for transferring a symbol to a new listing participant • Update appendix E (symbol master transfer topics)
1.7.2	3/6/2019	CAT NMS, LLC	• Update encryption requirements • Change connectivity requirements from SFTP to S3 Upload • Add Disaster Recovery information • Add MIAX Emerald options exchange specifications • Add appendix G with sample transmission of Participant files to S3 buckets
2.0.0	5/10/2019	FINRA CAT	• General Format Modifications ♦ Table numbers added ♦ Font changes ♦ Data dictionary changed from list to table format ♦ Typographical errors corrected ♦ Revised grammar as necessary • File compression has been limited to BZIP2 (.bz2) • Equities Submissions specifications have been greyed out. • PP SLA Requirements have been updated with new options files submission times • Data flow Architecture diagram updated to show the ability of PP's to pull feedback files from the Plan Processor AWS S3 location • Connectivity section updated to show new architecture of mandated S3 Direct Links (required by Nov.) • Physical locations of the feedback subdirectories identified for each Plan Reporter ID • Added AWS S3 Direct Download Process • Disaster Recovery Information updated. • Feedback and corrections flow chart for visualization of the process has been added.

Version	Date	Author	Description
			- Physical locations of the feedback subdirectories identified for each CAT Reporter - FieldName and FieldValue have been added to the feedback JSON format. - Error Codes for the correction feedback loop added in Appendix B - Data Dictionary Updates - Added Plan Participant best practices appendix
2.0.0 Enhanced	6/7/2019	FINRA CAT	- Corrected data type for name/value pair to add JSON object to match verbiage of name/value description in section 1.4.1 - Marked equity event sections 4.1 (EOA event), 4.2 (EOR event) and 4.8 (EOF event) with a black font since they are applicable for the June release - Section 5.2.2.3 definition for OSLM (option stock leg modified) event was changed to swap place the seqNumber attribute ahead of the seqNumSub attribute - Enhanced OT record samples to include Side Trade Details in Section 8.3.1 - Enhanced OT record samples to include Side Trade Details in Section 8.4.1 - In section 9.1.2 the compressedHash field description was changed to be consistent with the Include Key column which mandates that this field is populated. - Section 10.1 now articulates that all feedback files will be compressed using bz2 - Modify section 10 JSON feedback examples to be in sync with document verbiage and added more descriptive language for feedback files. - Modify document in section 10 to eliminate statements indicating that the entire file will be rejected if it contains an invalid message type - Sections 6, 10.9.1 and 10.10 have been marked with a grey font since they are not applicable to the June release - Added new error codes in Appendix B - Appendix F – Data Dictionary - Add new value 'd' for orderAttributes name 'REJA' for Cboe non legacy options exchanges - Change data type for cancelReason to Choice from text(255) - Change data type of the orderAttributes value for name NBBOProtection to Boolean from choice for Cboe (C1 Legacy) - Add new values for definedNoteData field for name AuctionType for Cboe (C1 Legacy) - Add new values for oderAttributes names AckSubLiquidity and RESTA for Cboe non legacy options exchanges - Add new value for handlingInstructions name TifMod for Cboe non legacy options exchanges - Divide ExecutionCode Attribute name/values between Cboe non legacy options exchanges and Cboe (C1 Legacy)

Version	Date	Author	Description
			Added valid temporary name value pairs for executionCodes, handlingInstructions, and orderAttributes to support back processing data received from 3/29/2019 – 6/21/2019
2.1.0	9/24/2019	FINRA CAT	- Section 4.2: Remove duplicative rows from Table 20, which describes the Equity Order Route event type - Removed section 9.3 with obsolete diagram of token exchange - Section 9.5: Update connectivity section to show private line connection details - Section 10.11.1 Feedback and Correction: Enhanced the description to state a reference data error can only be corrected by resubmitting the entire file after correcting the error - Section 10.11.1 Feedback and Correction: Enhance the correction processing section to state that the record offset in the feedback file for correction processing will reference the original file and not the correction file. - Appendix F: Data Dictionary modifications - Appendix G: Update for utilizing CATFT (fileX) for token retrieval and file transfer
3.0.0	11/19/2019	FINRA CAT	- Section 4: Add routedOrderId to EOM, EOJ. Added routedOrderId to side details on EOT and ETC. These attributes were added to facilitate equity linkage discovery - Section 4.15: Added new link route keys for EOM, EOJ, EOT and ETC events - Section 5: Add routedOrderID to OOM, OCOM, OOJ, OCOJ, OT and OTC option events. All of these attributes were added to events to facilitate option linkage discovery - Section 5.6 – Added new keys for Cross order and order route - Section 7 – Added examples for stock events with routedOrderId - Section 8 – Added examples for option events with routedOrderId - Section 9.1.2: Change to mandate isKindDone is populated with “true” after transmission of a fileKind is complete for the trade date. - Section 10: Changed the directory structure for feedback files - Section 10.9.3: Added to demonstrate feedback for Intra Exchange Linkage Discovery phase - Appendix B Error Codes: Added error codes for Intra Exchange Linkage Discovery phase - Appendix F Data Dictionary: Update orderAttributes to include the pairedOrderId to facilitate linkage for cross orders. Update to data dictionary for cancelReason field and add orderType values for IEX. Updates to Cboe values due to migration to Bats technology - Fixed typo in appendix G – CATFT Token Service instructions and examples - General verbiage and grammatical corrections
3.0.1	2/25/2019	FINRA CAT	- Removed optnId from cross order key for OOA and OOM events - Section 8.4 page 174: Fixed typo in example for OT event with routedOrderId for partially executed away trade

Version	Date	Author	Description
			- Appendix D FINRA Trade Reporting Facility (TRF) Fields: Added Related Market Center Id for MIAX PEARL Equities - Appendix F Data Dictionary: Enhance the orderAttributes definition for pairedOrderId to state the following: The Paired Order ID must uniquely identify the paired orders within the Trade Date and Exchange - Appendix F Data Dictionary: Added new order attribute name value pair for IEX for AIQ (Anti-Internalization Qualifier) - Appendix F Data Dictionary: Added new Plan Participant ID for MIAX PEARL Equities - Appendix F Data Dictionary: Removed orderAttribute Auction type 'c' for Cboe - Appendix F Data Dictionary: Removed legacy origin codes of 'P' and 'Y' from legacy Cboe possible exchangeOriginCode fields
3.1.0	3/10/2020 – 4/15/2020	FINRA CAT	<i>The following changes were presented to TWG on 3/13:</i> - Marked sections pertaining to equities with a black font from grey font in anticipation of on boarding LTSE and BSTX equity exchanges - Added Cross Order linkage key to EOA, EOM, and EOJ events - Section 10: Added clarification that if an entire file is rejected because it exceeded the ten percent threshold, then it must be corrected with a replacement file, not a correction file - Appendix F: Added BSTX – Boston Security Token Exchange as a Participant Id - Appendix G: Added new landing directories for equities exchanges <i>The following changes were presented to TWG on 4/16:</i> - Updated description of OOM, OOJ, EOM, and EOJ to clarify. - Updated definition of 'quantity' on OOM, OOJ, EOM, and EOJ to clarify. - Appendix F: Updated orderAttributes to add REJA name/value pair for LTSE for Cboe equity exchanges. Added handlingInstructions to add LTSE for NASDAQ equities.
3.1.0-r1	05/29/2020 – 06/05/2020	FINRA CAT	- Appendix F: Added executionCodes and orderAttributes values to support introduction of new Cboe Delta Adjust at Close order type. - Appendix F: Added handlingInstructions allowed value of 'e' for Cboe (Midpoint Discretionary Order with Quote Depletion Protection) - Appendix F: Added handlingInstructions allowed value of 'CUBEAUCS' for NYSE Options (Solicitation CUBE) - Appendix G: Updated format for clarity §2.3 and §9.2 updated to include clarifications on the submission of the Options Dictionary containing products not included in OCC data. §4 Equities Route Events (EOR, ECR, and EMR) and §5 Options Route Events (OOR, OOMR, OOCR) updated to remove session from event Route Link Keys as the session is not provided by Industry Members.