CAT Technical Specifications for Billing Trade Details

11/30/2023

Version 1.0

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Executive Summary

This document describes the CAT Billing Trade Details Files associated with monthly CAT invoices, including detailed information about data elements and file formats. It also describes access instructions, network and transport options.

This document should be read in conjunction with companion materials related to CAT Billing available on the CAT Fees section of the website, including Section V of the FAQs, the Industry Member Onboarding Guide, the CAT Reporter Portal User Guide, FINRA CAT Connectivity Supplement for Industry Members, and CAT Alert 2023-02 (CAT Billing).

The CAT Billing Scenarios document should be used as a guide for determining how CAT data reported by Participants is used to identify the CAT Executing Brokers for the Buyer and Seller for each transaction.

Table 1: Revision / Change Process

Version	Date	Author	Description
1.0	11/30/23	Consolidated Audit Trail, LLC	Initial publication. Applicable Schema version 1.0

1. Introduction

1.1. CAT Billing Overview

Industry Members who are CAT Executing Brokers that have billable CAT trading activity will receive CAT invoices. See FAQ V3 and CAT Alert 2023-02 (CAT Billing) for the definition of a "CAT Executing Broker" and FAQs V4 and V5 for a discussion of CAT billable activity.

1.2. CAT Reporter Portal

This section contains information about CAT Reporter Portal functionality related to the CAT Billing Trade Details Files. See the CAT Reporter Portal User Guide for more information.

1.2.1. CAT Invoice Viewer Functionality

The Invoice Viewer functionality within the CAT Reporter Portal contains various documents and files associated with CAT Billing, including Invoices and Late Notices, as well as the CAT Billing Trade Details files. The Invoice Viewer also contains summary information for each invoice, including the current status and amount outstanding as payments are received and processed.

1.2.2. CAT Billing Trade Details File Format Preference Setting

Account Administrators for an Industry Member may change the file format preference for CAT Billing Trade Details Files via the CAT Reporter Portal.

1.2.3. CAT Invoice

CAT invoices will be available as PDF files on the CAT Reporter Portal to properly entitled users. Invoices will be delivered on the 25th day of the month following the month in which the billable activity occurred. In the event the 25th day is a weekend or holiday, invoices will be delivered on the next business day. Payment for invoices is due within 30 days of the date that the invoice is generated and posted. Revised invoices are only generated in the event an invoice was initially with errors due to Plan Processor error and would follow a different delivery schedule. The delivery of invoices and revised invoices will be communicated as outlined in Section 3: File Posting Notifications and System Status.

See Section 14 of the CAT Reporter Portal User Guide for more information related to the CAT Invoice Viewer, including an overview of the Invoice. Also see CAT Alert 2023-02 (CAT Billing) or Section V of FAQs for additional information.

1.2.4.CAT Billing Trade Details Files

CAT Billing Invoice Trade Details File are generated and published concurrently with the invoices and available for download in a separate tab within the Invoice Viewer functionality. These files are available in the CAT Reporter Portal for 90 days.

2. CAT Billing Trade Details Files

This section contains information pertaining to CAT Billing Trade Details data and file formats.

2.1. Data Types

FINRA CAT, LLC will provide CAT Billing Trade Details Files in two formats of text-based files: JSON and CSV. Data types used throughout this document are described below.

To support JSON and CSV file delivery, the Trade Details Schemas are available on the CAT public website that describes each data type with required representation formats and a mapping that defines the position in a CSV representation.

2.1.1. CAT Billing Trade Details Data Types

All CAT Billing Trade Details data will be based on the defined data type of each item, including the formatting, data values, and ranges outlined below. All File Names, Field Names and Field Values are case sensitive in CAT. Examples of the data provided in CAT Billing Trade Details files are detailed in the table below.

Table 2: Data Types

Data Type	JSON Type	Description
Numeric	NUMBER	Composed of digits with an optional decimal point. Values must represent the exact value as per the examples: 1235 -1235 1235.67 -1235.67 Numeric data types described in this document 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 (23,19) indicates that the number can have a maximum of 18 digits before the decimal point and a maximum of 6 digits after the decimal point. Examples which comply with Numeric (23,19) include: 999999999999999999999.999999999999999999 100 Numeric values will always include a digit in the portion before the decimal. The fractional portion is optional. (for example, 0.25 will not be represented as .25).
Price	NUMBER	Numeric (23,19), which supports prices in the inclusive range from

Data Type	JSON Type	Description
		-999999999999999999999999.999999999999999999 to 999999999999999999999999.999999999999999999.
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).
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. Alphanumeric values are case sensitive.
Text	STRING	A string, composed of any printable ASCII character from 32 to 126. The string will not include the following character which serves as a delimiter: • comma (ASCII decimal 44, hex 2C) When a Text data type is described, it will include a number, indicating the maximum length of the field. For example, Text (7) means that the field can contain up to 7 characters. Text values are case sensitive.
Date	STRING	An 8-digit integer representing the date in YYYY-MM-DD.
Timestamp	STRING	A timestamp represents a moment in time. CAT Billing Trade Details Timestamp formats are only provided in the STRING format and will always be provided in a standard length of 24 (14,9) and are formatted as 'YYYYMMDDHHMMSS.CCCNNNNNN'. Timestamps with less than nanosecond granularity with be right-padded with zeroes to achieve the standard (14,9) length. • The **Date** portion will include four digit year, two digit month, and two digit day. Valid values: YYYY = 0000 - 9999, MM = 00 - 12, DD = 00 – 31. • The **Time** portion must include a two digit hour, two digit minute, two digit seconds. Valid values: HH = 00 - 23, MM = 01 - 59, SS = 01 - 59, CCC = 000 – 999, NNNNNN = 000000 - 999999. Examples of Timestamp in STRING format: • 20190617000120.000000000 • 20170107213000.123456789 • 20170107213000.123456000
Choice	STRING	A Text field with an explicit list of acceptable values.
Symbol	STRING	Text (22) - The string is case sensitive. Refer to Section 2.4.3 and Section 2.4.4 for more details in the CAT Reporting Technical Specifications for Industry Members or the Reference Data page on the CAT NMS Plan website for more information on Equity and Options symbols.
Member Alias	STRING	Text (8) - One of the aliases assigned by an SRO to one of its members. Each Industry Member may have multiple aliases, but a specific Member Alias may only be assigned once per SRO. See Section 1.3.4 of the CAT Reporting Technical Specifications for Plan Participants for more information on Member Alias.
Exchange ID	STRING	Text (10) - The Exchange ID is an ID assigned by CAT to each stock/options exchange. The Exchange ID is a subclass of Participant ID

Data Type	JSON Type	Description
		that only applies to exchanges (all participants except FINRA). Exchange ID is a subset of Participant ID, which is a subset of Participant Reporter ID. A 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. A CAT Reporter ID will uniquely identify each reporter, including Plan Participants, Industry Members, and associated reporting facilities.

2.2. CAT Billing Trade Details File

2.2.1. Supported Formats

CAT Billing Trade Details are supported in JSON and CSV formats. By Default, the CAT Billing Trade Details files will be delivered in CSV format. Account Administrators for an Industry Member may change the file format settings for CAT Billing Trade Details Files via the CAT Reporter Portal. See the CAT Reporter Portal User Guide for more information.

2.2.2. Schema

The Trade Details Schemas, which detail the structure and expected contents of the CAT Billing Trade Details files, are available on the CAT public website. The schema file will be maintained by the Plan Processor and will be versioned as the CAT Technical Specifications for Billing Trade Details change.

2.2.2.1. Schema Version

Schema changes will be updated when changes to the CAT Billing Trade Details occur that impact the schema. The following rules apply:

1. The Schema Version is assigned to a File Kind. The events within this Technical Specifications are assigned to File Kind ‘invoice_trade_details’.
2. The Schema Version is formatted as <Major>.<Minor>.<Patch>. All digits must be represented.
    - **Major –** updated when a change occurs that impacts all or a significant portion of Industry Members. In such cases, the schema is not backward compatible and will be specified accordingly.
    - **Minor –** updated when a change occurs that does not require coding changes for all Industry Members. In such cases, the schema is not backward compatible with support for previous version(s) as specified.
    - **Revision –** not part of the Schema Version. Used to represent updates to the Industry Member Technical Specifications which do not impact the Schema definition. Revision added to the end of the Schema Version as <Schema Version> r<#>.

3. Records contained in a in the CAT Billing Trade Details File will be formatted as per the Schema Version outlined in these Technical Specifications.

2.3. Schema Version

The schema file is a JSON format file that represents the following:

1. **Data Types** – CAT defined data types containing the following elements:

Element	Description
dataType	Data Type (e.g., Price) as defined in Table 2: Data Types.
JSONDataType	JSON standard data type to be used to submit data of this type. The JSON standard data types used in this schema are STRING, NUMBER, and OBJECT.
maxLength	Maximum length of the string submission. Applicable to text and alphanumeric types only.
scale	Number of digits after the decimal point. Applicable to numeric types only.
precision	Number of digits in a number. Applicable to numeric types only.

2. **CAT Billing Trade Details Definitions** – Field specifications for Trade Details defined in the Trade Details Schemas. Each field specification object contains the following elements:

Element	Description
name	Field Name set equal to Record Type for each event being specified.
dataType	Data Type.
JSONDataType	JSON standard data type to be used to submit data of this type.
required	Indicates whether the field is "Required" or "Optional".
position	The applicable CSV position of the field.

- **Choices** – For Choice data types, the list of possible values.

2.3.1.1. Example

The following is an abbreviated example of a schema containing part of the CAT Billing Trade Details File:

```
"RecordType": "Exchange",
"fields":
[{
"name": "recType",
              "dataType": "Text (20)",
              "JSONDataType": "STRING",
              "required": "Required",
              "position": "1"
},{
              "name": "versionNumber",
              "dataType": "Text (10)",
```

```
                    "JSONDataType": "STRING",
                    "required": "Required",
                    "position": "2"
        },
```


2.4. Connectivity

Connectivity to CAT will be through at least one of the following methods:

- Private Line provided by a Managed Network Service Provider (MNSP)
- AWS PrivateLink
- CAT Secure Reporting Gateway (SRG) Reporter Portal

Both the Private Line and AWS PrivateLink connectivity methods will support SFTP access, which provides access for automated, machine-to-machine CAT Billing Trade Details Files using the Secure File Transfer Protocol (SFTP) service as well as to the CAT Reporter Portal for accessing CAT Billing Trade Details Files.

The CAT Secure Reporting Gateway (SRG) connectivity method will only support the CAT Report Portal. The SRG requires multi-factor authentication (MFA) to establish a secure, encrypted session before accessing the CAT Reporter Portal. The SRG requires the use of modern browsers supporting HTML5 and TLS (Transport Layer Security). No client software installation is required.

The combinations of Connectivity and Interface Methods are summarized below.

Table 3: Connectivity Methods and Supported CAT Interfaces Methods

Connectivity Methods	Interface Methods	
	SFTP Access	**CAT Reporter Portal**
Private Line provided by MNSP	Y	Y
AWS PrivateLink	Y	Y
CAT Secure Reporting Gateway (SRG)	N	Y

For a detailed description of the CAT Connectivity Methods, including instructions for establishing access and connectivity to the CAT system, refer to the FINRA CAT Connectivity Supplement for Industry Members.

2.5. CAT Interface Methods

The interface methods available to Industry Members and CAT Reporting Agents to retrieve CAT Billing Trade Details Files include SFTP access and the CAT Reporter Portal. For a detailed description of the CAT Interface Methods, including instructions for establishing access and connectivity to the CAT system, refer to the FINRA CAT Connectivity Supplement for Industry Members.

2.5.1. SFTP Access

The SFTP access method is an automated, machine-to-machine interface utilizing the Secure File Transfer Protocol ("SFTP") to retrieve CAT Billing Trade Details Files. SFTP enables Industry Members to create machine-to-machine connections to securely retrieve data from FINRA CAT.

The following is the SFTP directory structure that will be made available in the Industry Member's home directory. Files associated with CAT Billing Trade Details will be uploaded in SFTP directories as per the following table.

Table 4: SFTP Directory

SFTP Directory	Usage
`/CATExecutingBrokerIndustryMemberCRD/cat/supporting-data`	Files containing Trade Billing Details generated and posted concurrently with Invoice publication.

2.5.2. CAT Reporter Portal

The CAT Reporter Portal is a web interface utilizing secure encryption protocols (HTTPS/TLS) and multi-factor authentication (MFA). The CAT Reporter Portal will facilitate data delivery of the CAT Billing Trade Details Files to properly entitled users.

2.6. Security

2.6.1. Encryption (In-transit)

TLS-based encryption, version 1.2 minimum, is required for connection to the Reporter Portal (whether accessed via private line or the SRG) and to the Security Reporter Gateway itself.

For SFTP access, in addition to the fact that the SFTP service is only accessible via private line, traffic will be encrypted by virtue of the intrinsic encryption capabilities of SFTP. AES256 will be supported for SFTP; support for other encryption protocols is under evaluation.

2.6.2.Authentication

Two-factor authentication will be required for access to the Reporter Portal. The first factor will be username and password which will require periodic rotation.

The second factor will be via push notification to an off-the-shelf application installed on a mobile device provided by the user. The user will be required to install the application to their mobile device through their mobile operating system's application store and then complete a registration process on the Reporter Portal or SRG. There is no cost to the Reporter or the user for this mobile application.

The SFTP service similarly requires that two conditions be met to access the interface. The first factor is authentication via username and password. The second is the use of a defined IP source address that is established during initial onboarding. The SFTP system implements an IP whitelist that prevents access from any system not on the whitelist.

More detailed information related to Security is described in the FINRA CAT Connectivity Supplement for Industry Members available at https://www.catnmsplan.com/registration/. For more information on entitlements related to SFTP access of the CAT Billing Trade Details, see the Industry Member Onboarding Guide.

3. File Posting Notifications and System Status

CAT provides notifications and information associated with CAT Billing Trade Details Files delivery, including:

- **System Status and Announcements:** available via the CAT Reporter Portal, the status of CAT processing will be made available with a distinction for instances when a processing delay or issue is occurring. Additionally, announcements related to system maintenance and upcoming changes will be presented.
- **Email notifications**: Email notifications will be sent each month when invoices have been published in the CAT Reporter Portal, and CAT Billing Trade Details are published concurrently to the invoice. Invoice notifications will be sent to subscribers of the CAT email subscription list and Billing Contacts within the CAT Contact Management System. Email notifications will also be sent for system status updates. In the event a revised invoice is published for an Industry Member, email notifications will be sent to applicable Billing Contacts within the CAT Contact Management System.

4. CAT Billing Trade Details Files and Data

The CAT Billing Trade Details Files are delivered concurrently and in conjunction with an Invoice being generated, and are posted to the CAT Reporter Portal for month and year of the CAT reporting period for which the invoice was generated. Invoices will be delivered on the 25th day of the month following the month in which the billable activity occurred. In the event the 25th day is a weekend or holiday, invoices will be delivered on the next business day. If no invoice was generated for an Industry Member for a particular month, then no CAT Billing Trade Details File will be generated. Revised invoices are only generated in the event an invoice was initially with errors due to Plan Processor error and would follow a different delivery schedule. The delivery of invoices and revised invoices will be communicated as outlined in Section 3: File Posting Notifications and System Status.

4.1. CAT Billing Trade Details File Generation

CAT Billing Trade Details Files will be made available via SFTP and/or the CAT Reporter Portal as described in Table 3: Connectivity Methods and Supported CAT Interfaces Methods.

For CAT Billing Trade Details files made available via SFTP or the CAT Reporter Portal, the following rules apply:

1. The format of CAT Billing Trade Details files will be defaulted to CSV format unless the Industry Member specifies the JSON file format preference setting within the CAT Reporter Portal. Account Administrators may change the file format settings for an Industry Member.
2. CAT Billing Trade Details Files will be compressed. Each line in the file will contain exactly one record ending with a new-line character of \n if in CSV format. In JSON, each record is a normal JSON object contained within the curly brackets {} and will end with a new-line character (ASCII decimal 10, hex 0A).
3. The comma (ASCII decimal 44, hex 2C) is the JSON and CSV field delimiter.
4. The retention time for CAT Billing Trade Details files on the SFTP server is 90 calendar days. After that time, they will be removed from the server. CAT Billing Trade Details will likewise be available via the CAT Reporter Portal for 90 days.
5. Files have a record limit of approximately 1,000,000 records per file. CAT Executing Brokers with more than 1,000,000 records for a given invoice month will receive multiple files until all records have been provided. Each file will be incremented using a File Sequence Number guaranteeing uniqueness (e.g., 0001, 0002, 0003).
6. CAT Billing Trade Details for an Industry Member will be accessible under the Industry Member's home directory on the SFTP server if the Industry Member has an SFTP account.
7. The SFTP directory is read-only. File deletion is not supported.

4.1.1.CAT Billing Trade Details File Names

1. CAT Billing Trade Details Files created by CAT will be named using the following format:

```
<invoice_trade_details>_<CRD of Executing Broker receiving the CAT
Billing Trade Details File>_<Invoice Number>_<Sequence number of the
file, 4-digits long left-padded with zeros>.<Format Extension>.
<Compression Extension>
```

Example: invoice_trade_details_999999_CBS20231112345_0001.csv.bz2

Example: invoice_trade_details_999999_CBS20231112345_0001.json.bz2

Table 5: Elements of a CAT Billing Trade Details File Name

Field Name	Data Type	Description
File Kind	Alphanumeric	Set to 'invoice_trade_details'. Case sensitive.
CAT Executing Broker ID	Unsigned	The CRD Number of the CAT Executing Broker receiving the CAT Billing Trade Details File.
Invoice Number	Alphanumeric	The Base File Name (excluding format extension) of Invoice Number of the invoice associated with the CAT Billing Trade Details File. CBS<6-digit integer representing the month and year of the CAT reporting period for which the invoice was generated YYYYMM><random 5-digit long integer, left-padded with zeroes, representing the sequence number used by the Plan Processor for Invoice document generation> • Example: CBS20231100001 • Example: CBS20231100002 The Revised Invoice's file name will be the same as the original Invoice with the updated version number of the Revised Invoice appended to the end (e.g., _1, _2, etc.). • Example: CBS20231100001_1 See Section 14 of the CAT Reporter Portal User Guide for more information related to the naming format for Invoices and Revised Invoices.
File Sequence Number	Unsigned	Sequence number of the file, 4-digits long left-padded with zeros The File Sequence number will always be provided to prevent duplicate CAT Billing Trade Details file names when multiple files for the same CAT Executing Broker ID are generated and associated with the same Invoice.
Format Extension	Alphanumeric	Represents the CAT Billing Trade Details format. JSON formatted CAT Billing Trade Details will be set to 'json', and CSV formatted CAT Billing Trade Details will be populated with 'csv'.
Compression Extension	Alphanumeric	Set to 'bz2'. Case sensitive.

4.1.2.CAT Billing Trade Details File Schema

There are two types of CAT Billing Trade Details records, On Exchange and Off-Exchange.

4.1.2.1. On Exchange Schema

Table 6: Elements of a CAT Billing Trade Details – On Exchange

Seq	Name	Data Type (Length)	Description
1	recType	Text (20)	Record Type; Set to 'Exchange' for Exchange Trade Detail Records.
2	versionNumber	Text (10)	The schema version of the file
3	eventTimestamp	Timestamp	The date/time of the execution or when cancellation was received or when a trade was broken.
4	tradeDate	Date	The date on which a trade occurred or was broken or corrected.
5	executionDate	Date	Date when the trade was executed.
6	eventReportDate	Date	Date the events are reported to the FINRA CAT Processor.
7	exchange	Exchange ID	The ID for the exchange on which the trade took place. See Appendix B: Data Dictionary for *exchange* values.
8	side	Text (20)	Side of the execution trade.
9	symbol	Text (20)	Equity symbol in the listing market /OSI Symbol code for option trades.
10	member	Member Alias	The identifier for the member firm that is responsible for the order. This is the CAT Executing Broker.
11	memberCRD	Text (20)	CRD number of the executing member firm.
12	executionQuantity	Unsigned	Number of shares traded.
13	executionPrice	Price	Unit price of the shares executed in the trade
14	tradeID	Text (40)	Identifier used by an exchange to identify a specific trade.
15	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.
16	quoteID	Text (40)	The ID of the quote, only applicable only when this side of the execution is an options market maker quote.
17	routedOrderID	Text (40)	The order ID that the firm used in the API message when they routed the original order to the exchange (e.g., in FIX it would be ClOrdId,

Seq	Name	Data Type (Length)	Description
			in OUCH it would be Order Token)
18	session	Text (40)	The ID assigned to the specific session that the routing member used to route the order to the exchange
19	routingParty	Text (8)	The ID string used to identify the entity that routed this order to the exchange (senderIMID)
20	mootLinkIdentifier	Text (40)	The Order ID of the MOOTLink Trade from the Industry Member Data
21	eventType	Text (5)	Event Type submitted by Exchange to CAT: EOT Order Trade ETB Trade Break ETC Trade Correction OT Simple Option Trade OTC Option Trade Correction OTB Option Trade Break
22	optionMultiplier	Numeric (23,9)	Value equivalent to the options contract multiplier. *optionMultiplier* will be used to calculate *executedEquivalentShares*.
23	executedEquivalentShares	Numeric (23,9)	Same as executionQuantity for NMS Stocks. For Listed Options, *executionQuantity* will be multiplied by *optionMultiplier* to calculate *executedEquivalentShares*

4.1.2.2. Off-Exchange Schema

Table 7: Elements of a CAT Billing Trade Details – Off-Exchange

Seq	Name	Data Type (Length)	Description
1	recType	Text (20)	Record Type; Set to 'TRF' for TRF/ORF Trade Detail records.
2	versionNumber	Text (10)	The schema version of the file.
3	executionTimestamp	Timestamp	Date and time the execution occurred.
4	tradeReportTimestamp	Timestamp	Date and time the trade report was received by the reporting facility.
5	tradeReportDate	Date	Date the trade report was received by the reporting facility.
6	executionDate	Date	Date the execution occurred.
7	eventReportDate	Date	Date the events are reported to the FINRA CAT Processor.
8	marketCenterId	Choice	Trade Reporting Facility/ORF where the trade was reported. See Appendix B: Data Dictionary for *marketCenterId* values.
9	reportedSideCode	Choice	Side of the trade (buy/sell/cross) from the

Seq	Name	Data Type (Length)	Description
			perspective of the firm with the reporting obligation. Allowed Values: B Buy Side S Sell Side X Crossed Trade
10	symbol	Text (20)	Equity symbol in the listing market.
11	reportingExecutingMpid	Member Alias	MPID of the executing party.
12	reportingExecutingCRD	Text (20)	CRD of the executing party.
13	contraExecutingMpid	Member Alias	MPID of the contra-side executing party.
14	contraExecutingCRD	Text (20)	CRD of the contra executing party.
15	executionQuantity	Unsigned	Number of shares traded.
16	executionPrice	Price	Unit price of the trade.
17	controlNumber	Text (30)	Unique identifier for the reporting side of each transaction.
18	contraControlNumber	Text (30)	Control Number for the contra party.
19	reportingSideBranchSequenceIdentifier	Text (20)	Branch/sequence number of the reporting-side firm.
20	contraSideBranchSequenceIdentifier	Text (20)	Branch/sequence number of the contra-side firm.
21	reversalFlag	Choice	Indicates that the trade report is a reversal transaction. Y Reversal N Not a reversal
22	publishIndicatorCode	Choice	Identifies if the trade is media reportable or not. Y Media Report Eligible N Not Media Report Eligible
23	saleCondition	Text (8)	Condition under which trade was executed. See Appendix B: Data Dictionary for *saleCondition* values.
24	sideFlag	Text (40)	This flag will be set to 'ReportingSide' or 'ContraSide' based on the CAT Executing Broker. The side represents the side reported on the TRF Trade for which the CAT Executing Broker is responsible for CAT Billing purposes.
25	otcMultiplier	Numeric (23,9)	0.01 for OTC Equity Securities. 1.0 for NMS Securities. *otcMultiplier* will be used to calculate *executedEquivalentShares*.
26	executedEquivalentShares	Numeric (23,9)	Same as *executionQuantity* for NMS Stocks. For OTC Equity Securities, executionQuantity will be multiplied by *otcMultiplier* to calculate *executedEquivalentShares*.

4.2. Route and Trade Linkage Key References

CAT Billing Trade Details data reflect events as reported by the Plan Participants, but can be mapped back to the Industry Member outbound route using linkage key fields. CAT Executing Brokers can refer to section 2.6.3 of the CAT Reporting Technical Specifications for Industry Members for further details.

Events can be further mapped to input protocols (FIX or Exchange binaries) on an exchange-by-exchange basis. For more information on route linkage keys use for orders routed to exchanges, see the Order and Quote Routing Field Mapping between CAT and Exchanges/Display-Only Facility document, as well as the Options Exchange Trade Mapping document.

5. Additional Information

5.1. Public Website

The CAT Public Website, www.catnmsplan.com, is available via the public internet, and is hosted outside the CAT secure network. The CAT Public Website provides information about CAT Billing, including links to SEC Rule 613, CAT Billing Technical Specifications, FAQs, training materials, and CAT Helpdesk contact information.

To subscribe to email notifications, visit the CAT NMS Plan website.

Contact help@finracat.com for any questions and/or feedback regarding this document.

Appendices

Appendix A: Change Release Management Process

Following publication of version 1.0, changes to this CAT Technical Specifications for Billing Trade Details will be released as follows:

- All proposed amendments to the Technical Specifications will be made in accordance with the CAT NMS Plan, including being approved or deemed approved (as applicable) by the Consolidated Audit Trail, LLC Operating Committee.
- Prior to the go-live date for any system changes set forth in the Technical Specifications:
  - A new Technical Specifications will be posted to the CAT Public Website, www.catnmsplan.com.
  - A notice will be posted on the CAT NMS Plan Public website with a summary of changes, the go-live date for the changes and links to relevant information.
  - One or more email alerts will be sent to the email address(es) on file for the CAT Executing Brokers with a summary of changes set forth in the revised Technical Specifications, the go-live date for the changes and links to relevant information.
  - As the go-live date approaches, Industry Members will be able to prepare for changes using the revised CAT Technical Specifications for Billing Trade Details format. The revised Technical Specifications will include a summary list of changes as well as a table listing the specific areas of the document where the changes have been made.

Appendix B: Data Dictionary

Field Name	Data Type	Description
exchange	Choice	**National Securities Exchanges** AMER — NYSE American Equities AMEROP — NYSE American Options ARCA — NYSE ARCA Equities ARCAOP — NYSE ARCA Options BOX — BOX Options Exchange BX — Nasdaq BX Equities BYX — Cboe BYX Exchange BZX — Cboe BZX Equities BZXOP — Cboe BZX Options C2 — Cboe C2 Options CBOE — Cboe Exchange CHX — NYSE CHX EDGA — Cboe EDGA Exchange EDGX — Cboe EDGX Equities EDGXOP — Cboe EDGX Options EMLD — MIAX Emerald GEMX — Nasdaq GEMX IEX — Investor's Exchange ISE — Nasdaq ISE LTSE — Long Term Stock Exchange MEMX — Members Exchange MIAMI — Miami International Securities Exchange MRX — Nasdaq MRX NOBO — Nasdaq BX Options NOM — Nasdaq Options NSDQ — Nasdaq Stock NSX — NYSE National NYSE — The New York Stock Exchange PEARL — MIAX PEARL PEARLEQ — MIAX PEARL Equities PHLX — Nasdaq PHLX Options PSX — Nasdaq PHLX Equities
marketCenterId	Choice	**FINRA Transaction Reporting Systems** C — FINRA/Nasdaq Chicago Trade Reporting Facility D — FINRA/Alternate Display Facility L — FINRA/Nasdaq Trade Reporting Facility N — FINRA/NYSE Trade Reporting Facility O — FINRA/OTC Reporting Facility
saleCondition	Text	**Sale Condition** The *saleCondition* field will be populated with a concatenated value comprised of four distinct data elements derived from the Trade Report.

Field Name	Data Type	Description
		Each data element will be assigned to a sequence number within the concatenated value: • <seq. 1.><seq. 2><seq. 3><seq. 4> Any *null* value outlined below will be substituted with space (ASCII decimal 32, hex 20) in the associated sequence placement. For example, *saleCondition* is represented as follows in JSON: `,"saleConditon":"@2TK"` In CSV, *saleCondition* is represented as: @2TK **<*saleCondition* sequence 1>** @ Regular settlement C Cash settlement N Next day settlement R Seller settlement **<*saleCondition* sequence 2>** *null* No exemption 2 Self Help Indicator 3 Intermarket Sweep - Outbound 4 Derivatively Price 7 Error Correction 8 Print Protection F Intermarket Sweep J Sub-penny Indicator V Contingent Indicator **<*saleCondition* sequence 3>** *null* *N/A* T Executed outside normal market hours Z Executed during normal market hours and reported late U Executed outside normal market hours and reported late **<*saleCondition* sequence 4>** *null* No unusual trade detail 1 Stop stock (regular trade) A Acquisition B Bunched Trade D Distribution E Automatic execution (system) H Intraday trade detail (system) I Odd lot K Rule 155 Amex/Rule 127 NYSE

Field Name	Data Type	Description
		P Prior reference price R Away from market sale S Split trade W Average price trade X Exercise of OTC option V Contingent Trade

Appendix C: CAT Billing Trade Details File and Data Examples

This section includes examples for CAT Billing Trade Details Files and data. The examples are for illustrative purposes only. All CRD numbers, IMIDs and other identifying data used in the samples are purely fictional.

C.1: CAT Billing Trade Details File and Data (JSON)

The tables below illustrate examples of CAT Billing Trade Details File and data in JSON format.

Table 8: CAT Billing Trade Details File and data – Off-Exchange (JSON)

CAT Billing Trade Details File with Off-Exchange Data (JSON)	
File	File Name
CAT Billing Trade Details File	invoice_trade_details_999999_CBS20231112345_0001.json.bz2
File	File Contents
CAT Billing Trade Details File	{"recType":"TRF","versionNumber":"1.0","executionTimestamp":20230801093000.000000000,"tradeReportTimestamp": 20230801093000.000000000,"tradeReportDate":"2023-08-01","executionDate":"2023-08-01","eventReportDate":"2023-08-01","marketCenterId":"C","reportedSideCode":"B","symbol":"A123A","reportingExecutingMpid":"EFGH","reportingExecutingCRD":"2111","contraExecutingMpid":"WSXZ","contraExecutingCRD":"100101","executionQuantity":1000.00,"executionPrice":10.00,"controlNumber":"QAZW000011","contraControlNumber":"IKKN00012","reportingSideBranchSequenceIdentifier":"AERDSQ1234","contraSideBranchSequenceIdentifier":"AERDSQ1234","reversalFlag":"N","publishIndicatorCode":"Y","sideFlag":"ReportingSide","otcMultiplier":1.00,"equivalentExecutionShares":1000.00 {"recType":"TRF","versionNumber":"1.0","executionTimestamp":20230802093000.000000000,"tradeReportTimestamp": 20230802093000.000000000,"tradeReportDate":"2023-08-02","executionDate":"2023-08-02","eventReportDate":"2023-08-02","marketCenterId":"C","reportedSideCode":"B","symbol":"AZQW12","reportingExecutingMpid":"ABCD","reportingExecutingCRD":"2111","executionQuantity":2000.00,"executionPrice":10.00,"controlNumber":"QAZW000012","reportingSideBranchSequenceIdentifier":"AERDSQ1235","reversalFlag":"N","publishIndicatorCode":"Y","sideFlag":"ReportingSide","otcMultiplier":1.00,"equivalentExecutionShares":2000.00} {"recType":"TRF","versionNumber":"1.0","executionTimestamp":20230802093000.000000000,"tradeReportTimestamp": 20230802093000.000000000,"tradeReportDate":"2023-08-02","executionDate":"2023-08-02","eventReportDate":"2023-08-02","marketCenterId":"C","reportedSideCode":"B","symbol":"AZQW12","reportingExecutingMpid":"ABCD","reportingExecutingCRD":"2111","executionQuantity":2000.00,"executionPrice":10.0

CAT Billing Trade Details File with Off-Exchange Data (JSON)	
	0,"controlNumber":"QAZW000012","reportingSideBranchSequenceIdentifier":"AERDSQ1235","reversalFlag":"N","publishIndicatorCode":"Y","sideFlag":"ContraSide","otcMultiplier":1.00,"equivalentExecutionShares":2000.00} {"recType":"TRF","versionNumber":"1.0","executionTimestamp":20230803093000.000000000,"tradeReportTimestamp": 20230803093000.000000000,"tradeReportDate":"2023-08-03","executionDate":"2023-08-03","eventReportDate":"2023-08-03","marketCenterId":"C","reportedSideCode":"X","symbol":"IKJ56","reportingExecutingMpid":"EFGH","reportingExecutingCRD":"2111","contraExecutingMpid":"EFGH","contraExecutingCRD":"2111", "executionQuantity":3000.00,"executionPrice":10.00,"controlNumber":"QAZW000013","contraControlNumber":"QAZW000013","reportingSideBranchSequenceIdentifier":"AERDSQ1235","contraSideBranchSequenceIdentifier":"AERDSQ1235","reversalFlag":"N","publishIndicatorCode":"Y","sideFlag":"ReportingSide","otcMultiplier":1.00,"equivalentExecutionShares":3000.00} {"recType":"TRF","versionNumber":"1.0","executionTimestamp":20230803093000.000000000,"tradeReportTimestamp": 20230803093000.000000000,"tradeReportDate":"2023-08-03","executionDate":"2023-08-03","eventReportDate":"2023-08-03","marketCenterId":"C","reportedSideCode":"X","symbol":"IKJ56","reportingExecutingMpid":"EFGH","reportingExecutingCRD":"2111","contraExecutingMpid":"EFGH","contraExecutingCRD":"2111", "executionQuantity":3000.00,"executionPrice":10.00,"controlNumber":"QAZW000013","contraControlNumber":"QAZW000013","reportingSideBranchSequenceIdentifier":"AERDSQ1235","contraSideBranchSequenceIdentifier":"AERDSQ1235","reversalFlag":"N","publishIndicatorCode":"Y","sideFlag":"ContraSide","otcMultiplier":1.00,"equivalentExecutionShares":3000.00}

Table 9: CAT Billing Trade Details File and data – On Exchange (JSON)

CAT Billing Trade Details File with On Exchange Data (JSON)	
File	File Name
CAT Billing Trade Details File	invoice_trade_details_999999_CBS20231112345_0001.json.bz2
File	File Contents
CAT Billing Trade Details File	{"recType":"Exchange","versionNumber":"1.0","eventTimestamp":"20230801093000.000000000","tradeDate":"2023-08-01","executionDate":"2023-08-01","eventReportDate":"2023-08-01","exchange":"NYNQ","side":"Buy","symbol":"A123A","member":"EFGH","memberCRD":"99999999","executionQuantity":1000.00,"executionPrice":10.00,"tradeID":"AWESQ1234","routedOrderID":"QASQ11234","session":"EFGH1123","routingParty":"EFGH","eventType":"EOT","executedEquivalentShares":1000.00} {"recType":"Exchange","versionNumber":"1.0","eventTimestamp":"20230802093000.000000000","

CAT Billing Trade Details File with On Exchange Data (JSON)	
	tradeDate":"2023-08-02","executionDate":"2023-08-02","eventReportDate":"2023-08-02","exchange":"NYNQ","side":"Buy","symbol":"A123B","member":"RFQ7","memberCRD":"99999999","executionQuantity":2000.00,"executionPrice":10.00,"tradeID":"WSEN1234","routedOrderID":"WEDSEYR11234","session":"RFQ71123","routingParty":"RFQ7","eventType":"EOT","executedEquivalentShares":1000.00} {"recType":"Exchange","versionNumber":"1.0","eventTimestamp":"20230801093000.000000000","tradeDate":"2023-08-03","executionDate":"2023-08-03","eventReportDate":"2023-08-03","exchange":"NOOP","side":"Buy","symbol":"A123CAWS202301200","member":"AZA5","memberCRD":"99999999","executionQuantity":3000.00,"executionPrice":10.00,"tradeID":"MJUYHT1234","quoteID":"REDFRTF11234","eventType":"OT","optionMultiplier":100,"executedEquivalentShares":300000.00} {"recType":"Exchange","versionNumber":"1.0","eventTimestamp":"20230801093000.000000000","tradeDate":"2023-08-03","executionDate":"2023-08-03","eventReportDate":"2023-08-03","exchange":"NOOP","side":"Buy","symbol":"A123CAWS202301200","member":"AZA5","memberCRD":"99999999","executionQuantity":3500.00,"executionPrice":10.00,"tradeID":"MJUYHT1234","mootLinkIdentifier":"REWQTHWS","eventType":"OT","optionMultiplier":100,"executedEquivalentShares":350000.00} {"recType":"Exchange","versionNumber":"1.0","eventTimestamp":"20230801093000.000000000","tradeDate":"2023-08-04","executionDate":"2023-08-04","eventReportDate":"2023-08-04","exchange":"NZOOP","side":"Buy","symbol":"A123DAWS20230110","member":"XYX1","memberCRD":"99999999","executionQuantity":4400.00,"executionPrice":10.00,"tradeID":"VFREDWS234","routedOrderID":"MJUHTRF11234","session":"XYX1112

C.2: CAT Billing Trade Details File and Data (CSV)

The tables below illustrate examples of CAT Billing Trade Details File and data in CSV format.

Table 10: CAT Billing Trade Details File and data – Off-Exchange (CSV)

CAT Billing Trade Details File with Off-Exchange Data (CSV)		
File	File Name	
CAT Billing Trade Details File	invoice_trade_details_999999_CBS20231112345_0001.csv.bz2	
File	File Contents	
CAT Billing Trade Details File	LINE 1	TRF,1.0,20230801093000.000000000,20230801093000.000000000,2023-08-01,2023-08-01,2023-08-01,C,B,A123A,EFGH,2111,WSXZ,100101,1000.00,10.00,QAZW000011,IKKN00012,AERDSQ1234,AERDSQ1234,N,Y,,ReportingSide,1.00,1000.00
	LINE 2	TRF,1.0,20230802093000.000000000,20230802093000.000000000,2023-08-02,2023-08-02,2023-08-02,C,B,AZQW12,ABCD,2111,,,2000.00,10.00,QAZW000012,,AERDSQ1235,,N,Y,,ReportingSide,1.00,2000.00
	LINE 3	TRF,1.0,20230802093000.000000000,20230802093000.000000000,2023-08-02,2023-08-02,2023-08-02,C,B,AZQW12,ABCD,2111,,,2000.00,10.00,QAZW000012,,AERDSQ1235,,N,Y,,ContraSide,1.00,2000.00
	LINE 4	TRF,1.0,20230803093000.000000000,20230803093000.000000000,2023-08-03,2023-08-03,2023-08-03,C,X,IKJ56,EFGH,2111,EFGH,2111,3000.00,10.00,QAZW000013,QAZW000013,AERDSQ1235,AERDSQ1235,N,Y,,ReportingSide,1.00,3000.00
	LINE 5	TRF,1.0,20230803093000.000000000,20230803093000.000000000,2023-08-03,2023-08-03,2023-08-03,C,X,IKJ56,EFGH,2111,EFGH,2111,3000.00,10.00,QAZW000013,QAZW000013,AERDSQ1235,AERDSQ1235,N,Y,,ContraSide,1.00,3000.00

Table 11: CAT Billing Trade Details File and data – On Exchange (CSV)

CAT Billing Trade Details File with On Exchange Data (JSON)	
File	CAT Billing Trade Details File Name
CAT Billing Trade Details File	invoice_trade_details_999999_CBS20231112345_0001.csv.bz2

CAT Billing Trade Details File with On Exchange Data (JSON)		
File	File Contents	
CAT Billing Trade Details File	LINE 1	Exchange,1.0,20230801093000.000000000,2023-08-01,2023-08-01,2023-08-01,NYNQ,Buy,A123A,EFGH,2111,1000.00,10.00,AWESQ1234,,,QASQ11234,EFGH1123,EFGH,,EOT,,1000.00
	LINE 2	Exchange,1.0,20230802093000.000000000,2023-08-02,2023-08-02,2023-08-02,NYNQ,Buy,A123B,RFQ7,2111,2000.00,10.00,WSEN1234,,,WEDSEYR11234,RFQ71123,RFQ7,,EOT,,1000.00
	LINE 3	Exchange,1.0,20230803093000.000000000,2023-08-03,2023-08-03,2023-08-03,NOOP,Buy,A123CAWS202301200,AZA5,2111,3000.00,10.00,MJUYHT1234,,REDFRTF11234,,,,,OT,100,300000.00
	LINE 4	Exchange,1.0,20230803093000.000000000,2023-08-03,2023-08-03,2023-08-03,NOOP,Buy,A123CAWS202301200,AZA5,2111,3500.00,10.00,MJUYHT1234,,,,,,REWQTHWS,OT,100,350000.00
	LINE 5	Exchange,1.0,20230804093000.000000000,2023-08-04,2023-08-04,2023-08-04,NZOOP,Buy,A123DAWS20230110,XYX1,2111,4400.00,10.00,VFREDWS234,,,MJUHTRF11234,XYX11123,XYX1,,OT,100,4400000.00