TMX Information Processor

Consolidated Data Feed CDF™

Functional Specifications

Version 4.2

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1.0 Overview

This document describes the Consolidated Data Feed (CDF™), a data feed provided by the TMX Information Processor ("TMX IP"), operated by TSX Inc. The CDF provides access to consolidated pre- and post-trade market data from participating Canadian exchanges and ATSs ("marketplaces") where each CDF marketplace feed is a permissionable multicast feed through existing telecommunications links to TSX.

The CDF is comprised of:

- symbol and market status,
- trades, and
- orders and confirmations.

The CDF business content messages are formatted using the STAMP protocol syntax. STAMP, the Securities Trading Access Message Protocol, is the messaging protocol developed by TSX for order entry. More details about the STAMP protocol are given in the STAMP Specification (Reference [1]).

The TMX IP consumes the market data from the all the Canadian contributing marketplaces and it is important to note that not all message types or fields or values in the CDF feed will be provide if it is not originally provided by the contributing marketplace. For example a CDF feed for a dark market will not have order/cancellation confirmation messages or an OrderNumber in a Trade Report. Similarly, depending on the attributes of the lit markets contributing to the CDF, not all field values in the business messages will use the same convention or be the same length (i.e. OrderNumber). To determine which messages are required to build and maintain a CDF order book by marketplace the document "TMX Information Processor: CDF Guidelines" should be consulted.

1.1. Intended Audience

The intended audience of this specification are business analysts and programmer analysts.

All readers should familiarize themselves with Section 1.2 - Rule Notation Conventions, paying close attention to how the notation conventions are defined, as this notation is used throughout the specification.

Business analysts should focus primarily on, and Section 4.0 - Business Content Messages and Section 6.0 - Field Definitions. These two sections define how the trading information is defined in the CDF. In addition to these sections, the business analysts should be familiar with the trading rules and trading scenarios that these messages represent.

Programmer analysts should be familiar with the entire specification, although their focus should be on message structure and parsing.

1.2. Rule Notation Conventions

This section describes the notation convention for the elements of STAMP syntax used in the business content. Although the rules presented below are somewhat formal in nature, for casual reading of the specification all that is required is to keep in mind the following points:

- Text presented in a `typewriter typeface` font means that it is a rule that is defined in the Field Definitions (Section 6.0).
- Any rule that is enclosed in square brackets, "[" and "]" means that the rule is optional.
- The spaces between the rules mean that the rules are joined together.

When appropriate, this specification uses an augmented Backus-Naur Form (BNF) notation, similar to that presented in *RFC 822 – Standard For The Format of ARPA Internet Text Messages* (Reference [8]). The differences from standard BNF involve naming rules and indicating repetition and "local" alternatives. Comments about a rule, such as the hexadecimal representation of a character, are introduced by a semicolon (";") in-line after the rule definition. All text after a semicolon until the end of a line forms the comment.

Rules are used throughout the text of the specification when appropriate to formally define a concept. All of the rules are gathered in the Field Definitions on page 20 for convenience.

1.2.1. Rule Naming

Angle brackets ("<", ">") are used below in the syntax definition of rules to identify rule components; these brackets are not used, in general, in the rule names. The name of a rule is simply the name iTSXIf, rather than "<name>". Capitalized letters are used in names to highlight the meaning of the name.

1.2.2. Literal Text

Quotation marks enclose literal text (which is case sensitive). Literal text appears as is in the message content.

1.2.3. Alternatives: Rule1 | Rule2

Elements separated by vertical line ("|") are alternatives. Therefore, "`[abc | def]`" will accept abc or def.

1.2.4. Local Alternatives: (Rule1 | Rule2)

Elements enclosed in parentheses are treated as a single element. Thus, "`(elem (abc | def) elem)`" allows the token sequences "`elem abc elem`" and "`elem def elem`".

1.2.5. Repetition: *Rule

The character "`*`" preceding an element indicates repetition. The full form is:

```
<l>*<m>element
```

indicating at least `<l>` and at most `<m>` occurrences of element, with default values of 0 and infinity respectively.

So that "`*(element)`" allows any number, *including zero*; "`1*element`" requires at least one; and "`1*2element`" allows one or two.

If the repeated element is a `FieldIdentifier`, the repeated element will be represented in the datastream using the `FieldIdentifierIndex` notation as described in *Section 2 of the STAMP Specification Version 5.5*.

1.2.6. Optional: [Rule]

Square brackets enclose optional elements; eg., "`[abc def]`" is equivalent to "`1*1(abc def)`". The square bracket notation is used in the message description.

1.2.7. Specific Repetition: Nrule

"`<n>(element)`" is equivalent to "`<n>*<n>(element)`"; that is, exactly `<n>` occurrences of `(element)`. Thus `2Digit` is a 2-digit number, and `3AlphaNumeric` is a string of three alphabetic characters. If the repeated element is a STAMP `FieldIdentifier`, the repeated element will be represented in the datastream using the `FieldIdentifierIndex` notation as described in *Section 2 of the STAMP Specification Version 5.4.*

1.2.8. Client/Server Notation Convention

For the purpose of this specification, "Client" (initial capital letter) refers to the computer application that "listens" for output messages from the CDF service.

2.0 Service Architecture

The CDF service adheres to TSX service architecture for market data dissemination as defined in reference [3].

2.1. Framing

CDF market data message uses the following basic structure:

STX	Transport Header	Message	ETX

where, STX is the Start of Text (Hexadecimal 0x02), and ETX is the End of Text (Hexadecimal 0x03), "Message" is the business content that is described in Sections and .

2.2. Transport Header

The "Transport Header" is a 22-byte section coded in ASCII and structured as follows:

Field	Length	Contents / Values
Length	4	Total length of header and message business content (excludes STX and ETX), padded with zeros to the left.
Sequence Number	9	Sequence number assigned at service broadcast, padded with zeros to the left. Blank on Heartbeat messages.
ServiceID	3	"CDF" Code identifying the service Consolidated Data Feed
Retransmission Identifier	1	0 – Normal transmission 1 – Message being sent out of order from their generation by the trading system. This can be due to unusual processing causing delay or recovery from a problem or link failure.
Continuation Indicator	1	0 – This is stand alone packet (the message fits in one packet) 1 – This packet continues in the next packet (the message spans at least 2 packets). 2 – This packet is the continuation of the previous packet. 3 – This packet is both the continuation of the previous packet and continues in the next packet.
Message Type	2	"V" for Heartbeat message (padded with a blank to the right). Left blank for all other message types.
Exchange Identifier	2	Code assigned to the originating exchange (padded with a blank to the right) as follows: "T" for TSX market "V" for TSX Venture Exchange market "C" for Chi-X Canada "H" for CX2 "O" for OMEGA ATS "P" for Pure Trading "A" for Alpha Group "M" for TriAct Canada Match Now "L" for Liquidnet "Y" for Lynx ATS ~~"N" for CNSX~~ "I" for Instinet Canada Cross "S" for TMX Select

Every message packet is assigned a sequence number from 000000001 to 999999999 (decimal ASCII), with wrap-around. The sequence is reset to 1 each day and it is incremented by 1 for each packet sent.

2.4. Heartbeat Message

The Heartbeat message is sent every 60 seconds and is unsequenced. The Heartbeat message provides three information sections regarding real time message delivery, delimited by brackets:

- ◊ HEARTBEAT section, including date and time and decimals seconds since 1970 up to the microsecond,
- ◊ LAST SENT section, including sequence number of last message sent, time sent, and decimal seconds up to the microsecond,
- ◊ LAST HB section, including the "last sent" information passed in the last heartbeat message sent.

The information provided in the Heartbeat message allows clients to track real time delivery latencies.

The Heartbeat message is a fixed field length message with the following format:

Field	Length	Value /Definition	Description / Format
	1	"["	Separator
	10	"HEARTBEAT"	Section identifier
Date	10		Date in format YYYY-MM-DD
	1	blank	Separator string
TimeOfDay	8		Time of day in format HH:MM:SS
	1	"-"	Separator string
SecondsSince1970	19	6 decimals with embedded decimal point	Formatted with "%012d.%06d" in C language
	2	"][	Separator
	10	"LAST SENT "	Section identifier
SeqNbrOfLastMsgSent	9		Last sequence number sent, padded with 0s to the left
	1	"-"	Separator
TimeLastMsgSent	8		Time last message sent in format HH:MM:SS
	1	"-"	Separator
SecondsSince1970LastMsg	19	6 decimals with embedded decimal point	Formatted with "%012d.%06d" in C language
	2	"]["	Separator
	10	"LAST HB "	Section identifier – Last Heartbeat data, right-padded with blanks.
SeqNbrOfLastMsgSent	9		This number lets the client know if they missed a heartbeat
	1	"-"	Separator
TimeLastMsgSent	8		Time last message sent in format HH:MM:SS in last heartbeat
	1	"-"	Separator
SecondsSince1970LastMsg	19	6 decimals with embedded decimal point	Formatted with "%012d.%06d" in C language in last heartbeat
	1	"]"	Separator
OCSAsubject	20		TSX diagnostics
OCSAinstance	2		TSX diagnostics
Hostname	8		ID of the originating host.
Version	4		Version of the service being delivered

The following is an example of a heartbeat message:

```
\020207         CDF00V T [HEARTBEAT 2012-10-10 03:25:02-
001349853902.844623][LAST SENT 000001345-03:05:03-
001349852703.441869][LAST HB   000001345-03:24:02-
001349853842.845443]OCSA-CDF-1           ATDOTDR  00.1\03
```

The \02 and \03 strings represent respectively the STX and ETX characters framing the message.

2.5. Message Retransmission

CDF will provide support for automated retransmissions as defined in reference [3].

3.0 Message Structure

Business content in CDF messages is coded in STAMP format. This portion of the message is formally described as follows:

MessageContent	=	ControlHeader BusinessContent [ControlTrailer]
ControlHeader	=	ControlHeaderChar ControlHeaderContent
ControlHeaderContent	=	1*ControlHeaderField
ControlHeaderChar	=	<US-ASCII SOH> ; 0x01 Start of Heading
BusinessContent	=	BusinessContentChar 1*BusinessContentField
BusinessContentChar	=	<US-ASCII FS> ; 0x1c File Separator
ControlTrailer	=	ControlTrailerChar
ControlTrailerChar	=	<US-ASCII GS> ; 0x1d Group Separator

3.1. Control Header Content

ControlHeaderContent	=	CdfPubTimeStamp CdfRcvTimeStamp DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]

The CDF service includes the STAMP control layer header and trailer. The STAMP control header is described in detail in reference [1]. The only STAMP header field that provides useful information in the context of service is `TimeStamp`.

The `ControlHeaderChar` (0x01), `BusinessContentChar` (0x1c), and `ControlTrailerChar` (0x1d), separators are not explicitly mentioned in Section 4.0 - Business Content Messages.

3.2. Business Content Fields

Both the Control and Business Content Sections are further divided into *Fields*. Each field is made up of a field identifier and an optional field value. The identifiers and values are variable in length and content; the Field Definitions must be consulted for appropriate qualifying rules.

A field is divided into two sections; a field identifier and an optional field value. The `FieldIdentifier` is introduced by a `FieldIdentifierChar`. The optional `FieldValue` is introduced by the US-ASCII equals sign "=". Note that it is possible to have a `FieldIdentifier` without a `FieldValue`, in which case the `FieldValue` assumes a default value (see the Field Definitions).

The formal notation for a field is:

BusinessContentField	=	FieldChar FieldIdentifier "=" [FieldValue]
FieldChar	=	<US-ASCII RS; Record Separator> ; 0x1e

NOTE:

The `FieldIdentifier` and `FieldValue` listed in the Field Definitions are for reference only. Some of these fields re defined as part of the STAMP protocol but will never appear in the business content messages delivered with the CDF service.

3.2.1. Field Ordering

The order of the fields within a section of a STAMP message is position independent. They must only be of the correct *type* (e.g. the fields within the `ControlHeader` must be of the type `ControlHeaderField`), and may be in any order within the section.

3.2.2. Field Identifier

The *Field Identifier* is a number that is used as an index into the Field Definitions in Section 6.0 to identify the syntactic meaning of the field value. As an example, if the field identifier of a field was "55", this would mean the field value was a stock symbol.

For repeating groups of field identifiers, a "dot" notation is used. If a message contains multiple occurrences of a field identifier, each occurrence is represented by an addition field identifier index. If there are linked groups of fields the index is used to link the elements syntactically. For example, an `OrderBookMessage` (see Section 4.3 on page 13) may contain multiple fields in a message, such as "`64.0=1000`", "`197.0=Sell`", "`41.0=13.75`", "`55.0=SHK`", referring to an open sell order for symbol SHK for 1000 shares at $13.75. The tag interpretations are as follows: tag 197 represents MarketSide, tag 55 represents Symbol, tag 64 represents Volume, and tag 41 represents Price.

It is important to note that field indexes start at zero and are contiguous. Also, a field identifier without an explicit index is equivalent to an index of zero. Fields at the same index level are conceptually "records".

Note that the contiguous nature of the index refers to the conceptual record not individual FieldIdentifiers. For example, a STAMP message with the following tags, "11.0=ABC","11.1=DEF","15.1=5", would be valid and would represent a situation where tag 15 was optional and not present for the "0" record. There would, however, be at least one field at each index level.

The formal notation for a field identifier is:

`FieldIdentifier`	=	`1*4Digit [FieldIdentifierIndex]; 1 to 9999, no default`
`FieldIdentifierIndex`	=	`"." 1*4Digit ; 0 to 9999, default is 0`

3.2.3. Field Value

The *Field Value* contains the value of the field. To use a previous example, if the identifier was "`55`" and the value was "`BCE`", then the stock symbol for this message would be "BCE".

The formal notation for a field value is:

`FieldValue`	=	`1*PrintableChar`

4.0 Business Content Messages

The messages described in this section are the trading messages that are broadcast from CDF to the Client.

4.1. Trading Tier Status Message

This message is provide by Alpha Market, Toronto Stock Exchange, TSX Venture Exchange and TMX Select only. Alpha, TSX, TSXV and TMX Select send **Trading Tier Status messages** to the Client at the beginning of each trading day. The Trading Tier Status message provides statistical information to the trading community about the total number of:

- Stock groups per Trading Engine for the trading day.
- Symbols per Trading Engine for the trading day.
- Open orders per Trading Engine for the trading day.

TradingTierStatus Message	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessAction BusinessClass ExchangeId TotalNumOpenOrders TotalNumStockGroups TotalNumSymbols TradingSysTimeStamp TradingTierId
Where:		
BusinessClass	=	"MarketInfo"
BusinessAction	=	"TradingTierStatus"

4.2. SymbolStatus Message

The **SymbolStatus message** is a symbol directory that provides information for an equity, debenture or trading instrument for the current trading day.

- The SymbolStatus message is available at the beginning of each trading day.
- SymbolStatus message provides information for a trading instrument for the current trading day.
- The `ProductType` field indicates equity, debenture or other security type define by the marketplace (see Field Definitions).
- The `LastMessage` tag indicates the completion for the Symbol Status messages.

SymbolStatusMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessAction BusinessClass Symbol TradingSysTimeStamp [AcceptAnonymous] [AcceptSDL] [AcceptUndisplayed] [BoardLot] [Currency] [CUSIP] [CouponFrequency] [DividendFrequency] [ExpiryDate] [FaceValue] [LastMessage] [LastSale] [ListingMarket] [ListingTier] [MGF-Setting] [MGF-Volume] [MocEligible] [NumberOfMessages] [OpeningTime] [ProductType] [ShortExemptEligible] [SpecialistName] [SpecialistPhoneNumber] [StockGroup] [StockHaltDate] [StockState] [SymbolFullName] [TotalNumMessages]
Where:		
BusinessClass	=	"SymbolInfo"
BusinessAction	=	"SymbolStatus"

NOTE:

Depending on the marketplace, the valid trading instruments for the current trading day may be provided prior to the regular trading session in a serious of StockStatus Notification Messages (4.4). Not all marketplaces provide a start of day symbol directory. Not all marketplaces provide optional fields in the Business Content. Please refer to the TMX Information Processor: CDF Guidelines document.

4.3. OrderBook Message

OrderBook message provides the public information for all open orders in the market for a marketplace. The information is as of the end of the previous business day. Its purpose is to enable the initialization of the Client's trading book for the current trading session.

- The OrderBook message is available at the beginning of each trading day.
- The LastMessage tag indicates the completion for the OrderBook messages.

OrderBookMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BrokerNumber BusinessAction BusinessClass MarketSide OrderNumber [PublicPrice] Symbol TradingSysTimeStamp Volume [ExchangeId] [LastMessage] [NonResident] [NumberOfMessages] [Price][PriorityTimeStamp] [SettlementTerms] [TotalNumMessages]
Where:		
BusinessClass	=	"OrderInfo"
BusinessAction	=	"OrderBook"

NOTE:

Depending on the marketplace, open orders carried over from the previous trade day may be provided prior to the regular trading session in a serious of order/cancel confirmation report (4.6). Please refer to the TMX Information Processor: CDF Guidelines document for these marketplaces. Not all market centres support "Good Till Date" orders and will not provide orderbook type messages prior to the regular trading session. Please refer to the TMX Information Processor: CDF Guidelines document.

OrderNumber length may vary from marketplace to marketplace but will not exceed the length defined in the field definition (Section 6.0)

4.4. Stock Status Notification

A stock status notification is sent by a marketplace in response to a change in stock status on the marketplace's trading system.

StockStatusMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessClass Symbol TradingSysTimeStamp [AcceptAnonymous] [AcceptSDL] [AcceptUndisplayed] [BlindOffsetAccepted]] [CalculatedClosingPrice] [Comment] [Currency] [ExchangeId] [ListingMarket] [MGF-Volume] [MocEligible] [MocVwap] [OpeningTime] [SpecialistName] [SpecialistPhoneNumber] [StockState]
Where:		
BusinessClass	=	"StockStatus"

NOTE:

[ListingMarket] tag in this message type is only supported by ChiX and CX2.

4.5. Market State Update

A market state change message is sent by a marketplace whenever a notice of a market state change or a trading session change has been received from the marketplace.

MarketStateChangeMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessClass TradingSysTimeStamp [ExchangeId] [MarketState] [StockGroup]
Where:		
BusinessClass	=	"MarketStateChange"

4.6. Order/Cancel Confirmation Report

An order/cancel confirmation report is sent in response to a new order or cancel being entered into the marketplace's trading system.

An order/cancel confirmation report will confirm changes to the attributes of an existing order when they have been modified.

OrderCancelRespMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
PublicContent	=	BrokerNumber BusinessAction BusinessClass ConfirmationType OrderNumber PublicPrice Symbol TradingSysTimeStamp Volume [ByPass] [CFOdOrderNumber] [ExchangeId] [LotsOf] [MinimumFillVolume] [NonResident] [PriorityTimeStamp] [PriorityVolume] [SettlementTerms]
Where:		
BusinessClass	=	"OrderCancelResp"
BusinessAction	=	"Buy" | "Sell"
ConfirmationType	=	AssignTimePriority | Booked | Cancelled | PriceAssigned

The following are the meanings of the ConfirmationType field:

AssignedTimePriority	The order has been sequenced in the book according to its time priority. The PriorityTimeStamp indicates the new time stamp used for sequencing the order in the book.
Booked	The order has been entered in the book (accepted) and is now eligible for matching.
Cancelled	The order has been cancelled by the submitting broker and is no longer in the book. May also mean the order has been deleted, killed or busted depending on the terminology of the marketplace.
PriceAssigned	The trading engine has assigned a new limit price for the order

Note:

OrderNumber length may vary from marketplace to marketplace but will not exceed the length defined in the field definition (Section 6.0)

Processing of the Order/Cancel Confirmation message varies from marketplace to marketplace, please refer to the TMX Information Processor: CDF Guidelines document.

4.7. Trade Report

A Trade Report is sent in response to a trade occurring on a previously accepted new order, CFO, modified order or cross. The Trade Report may include relevant transaction details such as the opposite broker number, remaining order volume and if the broker acted as principal on the trade.

TradeReportMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	[2BrokerNumber] BusinessAction BusinessClass [2OrderNumber] Price Symbol [TradeNumber] TradingSysTimeStamp Volume [ByPass] [CFOdOrderNumber] [Cross Type][2DisplayVolume] [ExchangeId] [ExtendedHours] [LastSale] [Moc] [NonResident] [OrigTradeID] [2PriorityTimeStamp] [SettlementTerms] [TradeCorrection] [2TradeTimeStamp]
Where:		
BusinessClass	=	"TradeReport"
BusinessAction	=	"Cancelled" | "Trade"

Each trade consists of two fills. By convention, the first element of any two element field (.0) will refer to the buy side and the second element (.1) will refer to the sell side.

BusinessAction of "Cancelled" will appear in the Trade Report after it has been transacted.

Note:

- [OrderNumber] length may vary from marketplace to marketplace but will not exceed the length defined in the field definition (Section 6.0)
- Not all marketplaces provide [OrderNumber] for both the buying broker and selling broker. They may reflect only the Order that was "Booked" or represent a private order numbers obscured by zeros.
- [TradeNumber] length may vary from marketplace to marketplace but will not exceed the length defined in the field definition (Section 6.0)
- [TradeNumber] is passed through from each individual marketplace. Not all marketplaces provide this tag.
- If the marketplace does not support [TradeNumber]; trade cancellation messages will not provide [OrigTradeID].
- A trade correction message could represent a trade correction or a trade addition (manually added trade by the marketplace):
    - A trade cancellation precedes a trade correction; the trade correction message will reference the original trade [OrigTradeID] if the marketplace supports [TradeNumber].
    - A trade addition will not be preceded by a trade cancellation and will not provide a value for [OrigTradeID]

4.8. General Message

A general message is sent when it is generated by a marketplace.

GeneralMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessClass MessageText TradingSysTimeStamp [BulletinIndicator] [ExchangeId]
Where:		
BusinessClass	=	"GeneralMessage"

4.9. MBX Message

MBX is a generic name for "Market By Order" or "Market By Price".

The MBX message provides additional information, beyond orders and fills, to a gateway building MBX displays. A BusinessAction of "AssignCOP" is used when specifying the Calculated Opening Price (COP), and the list of Participating OrderKeys that are not priced at the COP. A BusinessAction of "AssignLimit" is used when resetting former better-priced-limit orders to their true limits.

A complete MBX message may be broken into parts for transmission if the message is very large. This is handled using the MBX_PartNumber and MBX_TotalParts fields. These fields will only be present if the message has been broken into parts.

MBXMessage	=	ControlHeader BusinessContent
ControlHeaderContent	=	[CdfPubTimeStamp] [CdfRcvTimeStamp] DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessAction BusinessClass CalculatedOpeningPrice Symbol TradingSysTimeStamp [ExchangeId] [MBX_PartNumber] [MBX_TotalParts] [1*OrderKey] [1*Price] [UniqueMessageID]
Where:		
BusinessClass	=	"MBXMessage"
BusinessAction	=	"AssignCOP" | "AssignLimit"

4.10. MOC Imbalance Notification

The CDF Server sends a MOC Imbalance Notification to the Client when there is a MOC Imbalance for each specified stock. This message is disseminated once per stock at 3:40pm.

MocImbalanceMessage	=	BusinessContent ControlHeader
ControlHeaderContent	=	CdfPubTimeStamp CdfRcvTimeStamp DestAddress SequenceNumber SourceAddress TimeStamp [CdfId] [CDFInboundTimeStamp] [CDFOutboundTimeStamp] [LasTSXquenceReceived] [Retrans] [RetransId]
BusinessContent	=	BusinessClass ExchangeId Symbol TradingSysTimeStamp [ImbalanceSide] [ImbalanceVolume] [UniqueMessageID]
Where:		
BusinessClass	=	"MocImbalanceStatus"

5.0 Operating Sequence

5.1. Transmission Times

(1) Clients can listen on the CDF port at any time during the day. The unsequenced Heartbeat message is transmitted every 60 seconds.

(2) Start of the day messages* including TradingTierStatus, StockStatus, OrderBook, SymbolStatus, MarketState and Order/Cancel Confirmation are sent at the beginning of each trading day prior to the marketplace's regular trading session.

(3) Transmission times for CDF are Eastern Standard/Daylight Savings Time.

(4) Please contact TMX Vendor Services for operational hours.

* Prior to the contributing marketplace's regular Pre-Open or Open Market State a marketplace may send "start of day" messages that will define the valid security symbols eligible for trading on that marketplace. Some markets contributing to the CDF may also provide order messages at start of day that define the open orders to be carried over to the current day's order book for that specific marketplace. Please refer to the TMX Information Processor: CDF Guidelines document.

5.2. Trading Hours for the CDF

Exchange	Regular Trading Session (EST)			Extended Trading Session (EST)		
	Pre-Open	Open	Close	Pre-Open	Open	Close
Alpha Group	07 :00	09 :30	16 :00	N/A	16 :15	17 :00
Chi-X Canada	07 :00	08 :30	17 :00	N/A	N/A	N/A
CX2	07 :00	08 :30	17 :00	N/A	N/A	N/A
CNSX	07 :00	09 :30	16 :00	N/A	N/A	N/A
Instinet Canada Cross	N/A	09 :30	16 :00	N/A	N/A	N/A
Liquidnet	N/A	06 :00	17 :00	N/A	N/A	N/A
Lynx ATS	N /A	08 :30	17 :00	N/A	N/A	N/A
Omega ATS	N /A	08 :30	17 :00	N/A	N/A	N/A
Pure Trading	07 :00	08 :00	17 :00	N/A	N/A	N/A
TMX Select	N/A	8 :00	17 :00	N/A	N/A	N/A
TriAct Match Now	08 :00	09 :30	16 :00	N/A	N/A	N/A
TSX	07 :00	09 :30	16 :00	N/A	16 :15	17 :00
TSX Venture Exchange	07 :00	09 :30	16 :00	N/A	16 :15	17 :00

6.0 Field Definitions

A

AcceptAnonymous – flag to indicate if a stock symbol is eligible to accept Anonymous orders.

```
FieldIdentifier = 110
AcceptAnonymous = "Y" | "N"
```

AcceptSDL – Flag to indicate if a stock symbol is eligible to accept SeekDarkLiquidity orders. (Alpha only)

```
FieldIdentifier = 622 ; Alpha only
AcceptSDL = "Y" | "N"
```

AcceptUndisplayed – flag to indicate if a stock symbol is eligible for undisplayed orders.

FieldIdentifier = 605
AcceptAnonymous = "Y" | "N"

AlphaNumeric – alphabetic and numeric characters.

```
AlphaNumeric = all US-ASCII character, 0x00 to 0x7f
```

B

BlindOffsetAccepted – value identifying that MOC Blind Offsetting orders have been accepted.

```
FieldIdentifier     = 490           ;   no default
BlindOffsetAccepted = "OffsetAcpt"
```

BoardLot – boardlot volume.

```
FieldIdentifier = 115
BoardLot        = Volume   ;   no default
```

BrokerNumber – an exchange assigned number identifying a Member firm.

```
FieldIdentifier = 70
BrokerNumber    = 1*3Digit   ;   no default
```

BulletinIndicator – indicates message is a bulletin.

```
FieldIdentifier   =   317
BulletinIndicator =   "Y" | "N"
```

BusinessAction – the action to take for a BusinessContent section.

```
FieldIdentifier = 5   ;   no default   Maximum 35 Characters
BusinessAction  = "AssignCOP"          |
                  "AssignLimit"        |
                  "Buy"                |
                  "Cancelled"          |
                  "Cross"              |
                  "DelayOpenStock"     |
                  "OpenDelayedStock"   |
                  "Sell"               |
                  "Trade"              |
                  "SymbolStatus"       |
                  "OrderBook"          |
                  "TradingTierStatus"  |
```

BusinessClass – the message class for a Business Content Layer message.

```
FieldIdentifier = 6 ; no default     Maximum 35 Characters
BusinessClass   = "GeneralMessage"       |
                  "MarketStateChange"    |
                  "MBXMessage"           |
                  "OrderCancelResp"      |
                  "StockStatus"          |
                  "TradeReport"          |
                  "MocImbalanceStatus"   |
                  "MarketInfo"           |
                  "SymbolInfo"           |
                  "OrderInfo"            |
```

BusinessContent – the business fields for a STAMP message.

```
BusinessContent = BusinessContentChar 1*BusinessContentField
```

BusinessContentChar – the character that introduces BusinessContent.

```
BusinessContentChar = <US-ASCII FS; File Separator>  ;  0x1c
```

BusinessContentField – a field found in the Business Content section of a message.

ByPass – to indicate orders are tradable against only visible/disclosed volumes and bypasses iceberg orders, RT participation and autofill, and special terms book. Any part of the OrderQty balance not filled immediately is "killed/cancelled".

```
FieldIdentifier = 503  ;
ByPass          = "Y" | "N"
```

C

CalculatedClosingPrice – the price at which MOC orders will trade at Closing.

```
FieldIdentifier        = 491    ;
CalculatedClosingPrice = Price
```

CalculatedOpeningPrice – the price at which orders will trade at the opening.

```
FieldIdentifier        = 191
CalculatedOpeningPrice = Price  ;  no default
```

CdfId – Unique internal identifier which includes an internal sequence number assigned by the system to each CDF message for tracking and audit.

```
FieldIdentifier = 513  ;  no default
CdfId = 1*31 AlphaNumeric
```

CdfInboundTimeStamp – Unique internal inbound CDF consolidation timestamp assigned by the system to each CDF message for tracking and audit.

```
FieldIdentifier     = 515  ;  no default
CdfInboundTimeStamp = 17Digit  ;  YYYYMMDDHHMMSSmmm (year, month, day,
                                  hour, minute, second, millisecond)
```

CdfOutboundTimeStamp – Unique internal outbound CDF consolidation timestamp assigned by the system to each CDF message for tracking and audit.

```
FieldIdentifier      = 514  ;  no default
CdfOutboundTimeStamp = 17Digit  ;  YYYYMMDDHHMMSSmmm (year, month, day,
                                   hour, minute, second, millisecond)
```

CdfPubTimeStamp – the time at which the CDF message was sent.

```
FieldIdentifier = 501  ;  no default
CdfPubTimeStamp = 17Digit  ;  YYYYMMDDHHMMSSmmm (year, month, day,
                hour, minute, second, millisecond)
```

CdfRcvTimeStamp – the time at which the CDF message was received.

```
FieldIdentifier = 502  ;  no default
CdfRcvTimeStamp = 17Digit  ;  YYYYMMDDHHMMSSmmm (year, month, day,
                              hour, minute, second, millisecond)
```

CFOdOrderNumber – the original order number of the order that was CFOd.

```
FieldIdentifier = 11
CFOdOrderNumber = OrderNumber  ;  no default;
```

Comment – a text field corresponding to a reason code entered by Market Surveillance when a stock is halted; or, the initiator of a delayed opening on a stock, or when there is a change to the RT/Oddlot Trader on a stock. As well, this is a system generated text field to describe the disabling of the MOC Session by TSX Trading Services.

```
FieldIdentifier = 173
Comment         = 1*40AlphaNumeric  ;  no default
```

Note:
For TSX:

1. When a Primary RT is added to a stock (from no RT to having an RT) – Comment = "RT Change"
2. When a Primary RT exists for a stock and is changed – Comment = "RT Change"
3. When a Primary RT is removed from a stock (leaving no RT) – Comment = "RT Removed"

Notes for MOC Eligible stock:
MOC Disabled, See Trader Notes for Details

ConfirmationType – the type of confirmation for a report.

```
FieldIdentifier  = 16
ConfirmationType = "AssignTimePriority"  |
                   "Booked"              |
                   "Cancelled"           |
                   "PriceAssigned"       |
```

ControlHeader – the portion of the STAMP message that contains administrative information.

```
ControlHeader = ControlHeaderChar 1*ControlHeaderField
```

ControlHeaderChar – the character that introduces ControlHeader.

```
ControlHeaderChar = <US-ASCII SOH; Start of Heading>  ;  0x01
```

ControlHeaderField – a field found in the ControlHeader section of a message.

CouponFrequency – Frequency at which the issuer pays the coupon to the bond holders. (OMEGA CDF ONLY)

```
FieldIdentifier = 522
CouponFrequency = "A"  - Annual
                  "S"  - Semi Annual
                "Q"  - Quarterly
                "M"  - Monthly
```

CrossType – Type of crosses originating from a participating organization between managed accounts that have the same manager.

```
FieldIdentifier = 390  ;   no default
CrossType       = "Basis"  ;  Basis |
                  "Contgt" ;  Contingent |
                  "Intrnl" ;  Internal |
                  "STS"    ;  Special Trading Session |
                  "VWAP"   ;  Volume Weighted Average Price |
```

Currency – the currency of a price.

```
FieldIdentifier = 58
Currency        = "$CAD"  ;
                  "$USD"
```

CUSIP – clearing and settlement registration number.

```
FieldIdentifier = 171
CUSIP           = 9*12AlphaNumeric  ;   no default
```

D

Date – the date format.

```
Date = 8Digit  ;   in YYYYMMDD format
```

DestAddress – the destination STAMP address.

```
FieldIdentifier = 17
DestAddress     = DirectedAddress | BroadcastAddress  ;  no default
```

Note that only servers are allowed to use `BroadcastAddress`.

Digit – representation of numeric values.

```
Digit = "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7" | "8" | "9"
```

DirectedAddress – a specific STAMP address.

```
DirectedAddress = 8Hexadecimal  ;   4 bytes (00000000 is reserved)
```

The value is a 4 byte value encoded in 8 byte hexadecimal format. Please refer to the *STAMP Assigned Addresses* document for details as to how these numbers are assigned.

DisplayVolume – public remaining volume.

```
FieldIdentifier = 150
DisplayVolume   = Volume
```

DividendFrequency – Frequency at which the issuer pays the coupon to the bond holders. (OMEGA CDF ONLY)

```
FieldIdentifier = 523
DivendendFrequency = "A"  - Annual
                     "S"  - Semi Annual
                     "Q"  - Quarterly
                     "M"  - Monthly
```

E

Empty – nothing.

```
Empty = ""
```

ExchangeId –identifies the exchange from which the message originated.

```
FieldIdentifier = 247
 ExchangeId      = "AIS"- Alpha IntraSpread
                   "ALP"- Alpha
                   "CDX"- TSXVenture
                   "CHI"- Chi-Xcanada
                   "CHT"- CX2
                   "CNQ"- CNSX
                   "ICX"- InstinetCanadaCross
                   "LIQ"- LiquidnetCanada
                   "LYX" - Lynx ATS
                   "OMG"- OmegaATS
                   "PUR"- PURE
                   "SEL"- TMX Select
                   "TCM"- TriActMatchNow
                   "TSE"- TSX
```

ExpiryDate – to indicate expiry date of the issue (OMEGA CDF ONLY)

```
FieldIdentifier = 521
ExpiryDate  = Date
```

ExtendedHours – to indicate action occurred during extended hours session (the Last Sale Trading Session).

```
FieldIdentifier = 76
ExtendedHours   = "Y" | "N"
```

F

FaceValue – the face value of a debenture.

```
FieldIdentifier = 119
FaceValue       = Price  ;   no default
```

Field – a unit within a section that includes a FieldIdentifier and an optional FieldValue.

```
Field = FieldChar FieldIdentifier "=" [FieldValue]
```

FieldChar – the character that introduces a field.

```
FieldChar = <US-ASCII RS; Record Separator>  ; 0x1e
```

FieldIdentifier – the value that identifies what the field means.

```
FieldIdentifier = 1*4Digit [FieldIdentifierIndex]  ;   1 to 9999, no default
```

FieldIdentifierIndex – an instance of a specific field within a message.

```
FieldIdentifierIndex = "." 1*4Digit  ;   0 to 9999, default is 0
```

FieldValue – the value of the field.

```
FieldValue = 1*PrintableChar
```

H

Hexadecimal – hexadecimal number representation.

```
Hexadecimal = Digit | "a" | "b" | "c" | "d" | "e" | "f"
```

I

ImbalanceSide – marker to indicate which side has a Volume Imbalance for Market On Close.

```
FieldIdentifier = 492  ;   no default
ImbalanceSide   = "BuySide"     |
                  "SellSide"    |
                  "NA"  ;   used when no Imbalance exists
```

ImbalanceVolume – identifies the volume of shares of the Imbalance side for Market On Close.

```
FieldIdentifier = 493  ;
ImbalanceVolume = 1*9 digit  ;   no default
```

L

LastMessage – a marker to indicate that the current query response is the last in a series. It varies, depending on the type of message:

- **SymbolStatus message**: Set the LastMessage indicator to 'Y' on the last symbol message in the stock group
- **OrderBook message**: Set the LastMessage indicator to 'Y' on the last open order message in the stock group

```
FieldIdentifier = 113
LastMessage     = "Y" | "N"
```

LastSale – last sale price of a stock.

```
FieldIdentifier = 114
LastSale        = NumericPrice  ;   no default
```

LasTSXquenceReceived – the last sequence number received.

```
FieldIdentifier    = 15
LasTSXquenceNumber = SequenceNumber  ;   no default
```

ListingMarket – The market on which the security is listed.

```
FieldIdentifier = 554
ListingMarket   = "T"  – TSX
                  "V"  – TSX Venture Exchange
                  "N"  – CNSX
                  "Y"  – NYSE
                  "Q"  – NASDAQ
                  "A"  – AMEX
                  "X"  – ALPHA
```

ListingTier – a Trading Engine identifier.

```
FieldIdentifier = 516
ListingTier  = 1*4Alphanumeric
               "AM"  – Alpha Main Tier
               "AV"  – Alpha Venture Plus Tier
```

LotsOf – a special term for an order specifying that each fill must be divided into equal lots. Total volume of order must be a multiple of LotsOf.

```
FieldIdentifier = 74
```

```
      LotsOf          = Volume  ;   no default
```

M

MarketSide – the buy or sell side of the market.

```
      FieldIdentifier = 197
      MarketSide      = "Buy" | "Sell"  ;   no default
```

MarketState – the indication of the current market state.

```
      FieldIdentifier = 159
      MarketState     = "Pre-open"                |
                        "Opening"                 |
                        "Open"                    |
                        "Closed"                  |
                        "Extended Hours Open"     |
                        "Extended Hours Close"    |
                        "Extended Hours CXLs"     |
                        "MOC Imbalance"           |
                        "CCP Determination"       |
                        "PriceMovementExtension"  |
                        "Closing"                 |
```

MBX_PartNumber – number identifying an MBX part message.

```
      FieldIdentifier = 194
      MBX_PartNumber  = 1*9Digit  ;   no default
```

MBX_TotalParts – total number of parts in a fragmented MBX message.

```
      FieldIdentifier = 195
      MBX_TotalParts  = 1*9Digit  ;   no default
```

MessageText – the description for a trading system generated message.

```
      FieldIdentifier = 160
      MessageText     = 1*1024PrintableChar  ;   no default
```

MGF-Setting – indicator to show if Minimum Guaranteed Fill processing is activated for this Symbol.

```
FieldIdentifier = 284          ;
      MGF-Setting     = "On" | "Off" ;   no default
```

MGF-Volume – the Minimum Guaranteed Fill volume.

```
FieldIdentifier = 49
      MGF-Volume      = Volume  ;   no default
```

MinimumFillVolume – the minimum volume on an order that is required for a trade.

```
      FieldIdentifier   = 31
      MinimumFillVolume = Volume  ; no default
```

Moc – identifies the trade as a Market On Close trade.

```
            FieldIdentifier = 494        ;
      Moc             = "Y" | "N"  ;
```

MocEligible

```
Field Identifier = 496  ;
MocEligible      = "Y" | "N"
```

MocVwap – volume weighted average price based on trades occurring in the continuous market for MOC.

```
FieldIdentifier = 495
MocVwap         = Price
```

N

NonResident – a terms marker indicating that trade participant is not a Canadian resident.

```
FieldIdentifier = 168
NonResident     = "Y" | "N"
```

NumberOfMessages – number of messages contained in the query response.

- **Symbol Status message**: Assign incremental numbers for each symbol message in the stock group
- **Order Book message**: Assign incremental numbers for each open order message in the stock group

```
FieldIdentifier  = 111
NumberOfMessages = 1*8Digit  ;  no default
```

NumericPrice – a price in a currency.

```
NumericPrice = 1*6Digit ["." 1*4Digit]
```

O

Opening Time Field – Contained in the Symbol Status.

```
Field Identifier = 120
```

OrderKey – unique key identifying orders in the system.

```
FieldIdentifier = 192
OrderKey        = BrokerNumber "|" OrderNumber  ;  no default
```

OrderNumber – a number assigned to the order by the trading system.

```
FieldIdentifier = 40                ;  no default
OrderNumber     = 1*18AlphaNumeric
```

OrigTradeID – used with trade corrections to reference previously reported executions and the side initiating the cancel/correct

```
FieldIdentifier = 506 ;
OrigTradeID = Trade # | Side  (B=Buy; S=Sell ; C = combined Indicator for both sides) | For TMX
Markets and CNSX/Pure Only
            = TradeNumber
```

P

Price – the limit or type of price for an order.

```
FieldIdentifier = 41
Price           = NumericPrice                    |
                  "MKT"  ;  Market Price, default  |
                  "OPG"  ;  Opening Price          |
                  "MBF"  ;  Must Be Filled         |
```

PrintableASCII – characters that have a glyph from the US-ASCII character set.

```
PrintableASCII = <any printable char from US-ASCII char set plus HT>
                 ; 0x09, 0x20 to 0x3c, 0x3e to 0x7e
```

PrintableChar – characters that have a glyph.

```
PrintableChar = PrintableASCII | PrintableLatin1
```

PrintableLatin1 – characters that have a glyph from the Latin 1 character set.

```
PrintableLatin1 = <any printable char from Latin 1 char set> ; 0xa1 to 0xff
```

PriorityTimeStamp– timestamp assigned by the trading engine to specify time priority of an order. Orders are sequenced in the order book based on symbol, price and PriorityTimeStamp.

```
FieldIdentifier   = 178
PriorityTimeStamp = 20Digit ; YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
```

PriorityVolume – the volume of the order that has priority.

```
FieldIdentifier = 68
PriorityVolume  = Volume  ;  no default
```

ProductType – the product type for a symbol.

```
FieldIdentifier = 105
ProductType     = "Debenture"       |
                  "Equity"          |
                  "TSX VENTURE-Equity" | TSXV Only.
                  "TSX VENTURE-Debenture" | TSXV Only.
                   "Rights"         |  Omega only
                  "Notes"           |  Omega only
                  "Warrants"        |  Omega only
```

PublicPrice – the public price of an order (specifically different than the 'private' price for some pre-open orders).

```
FieldIdentifier = 196
PublicPrice     = Price  ;  no default
```

R

Retrans – a marker that indicates the message is a retransmitted message.

```
FieldIdentifier = 97
Retrans         = "Y"| "N"  ;
```

RetransId – an identifier as to which retransmission request caused the retransmission.

```
FieldIdentifier = 147
RetransId       = 1*5AlphaNumeric  ; no default
```

S

SequenceNumber – the sequence number of the message.

```
FieldIdentifier = 50
SequenceNumber  = 1*9Digit  ;  0 to 999,999,999  ; no default
```

SettlementTerms – the terms for settlement of the order.

```
FieldIdentifier = 53       ; no default
SettlementTerms = "Cash"   |
                  "CT"     ; cash today    |
                  Date     ; delayed delivery date    |
                  "MS"     ; derivatives-related contingent equity trade  |
                  "NN"     ; non-net  |
```

ShortExemptEligible – the security is identified by the marketplace as short exempt eligible (OMEGA CDF ONLY)

FieldIdentifier = 520
ShortExemptEligible = "Y" | "N" ;

SourceAddress – the source STAMP address.

```
FieldIdentifier = 54
SourceAddress   = DirectedAddress  ;  no default
```

SpecialistName – the stock specialist's full name.

```
FieldIdentifier = 199
SpecialistName  = 1*30AlphaNumeric  ;  default is none
```

SpecialistPhoneNumber – phone number for the Specialist trader for the stock.

```
FieldIdentifier       = 312
SpecialistPhoneNumber = 1*30AlphaNumeric  ;  default is none
```

StockGroup – an indicator of stock group.

```
FieldIdentifier = 282
StockGroup      = 1*2Digit  ;  no default
```

StockHaltDate – the date on which the stock was halted.

```
FieldIdentifier = 80
StockHaltDate   = Date  ;  no default
```

StockState – the possible states that a stock may be in that are broadcast.

```
FieldIdentifier = 161
StockState      = "Authorized"                      |
                  "AuthorizedDelayed"               |
                  "AuthorizedFrozen"                |
                  "AuthorizedHalted"                |
                  "Inhibited"                       |
                  "InhibitedDelayed"                |
                  "InhibitedFrozen"                 |
                  "InhibitedHalted"                 |
                  "AuthorizedPriceMovementDelayed"  |
                  "InhibitedPriceMovementDelay"     |
                  "InhibitedPriceMovementFrozen"    |
```

Symbol – the security/issue symbol.

```
FieldIdentifier = 55
Symbol          = 1*17AlphaNumeric  ;  no default
```

SymbolFullName – the security/issue symbol's complete company name.

```
FieldIdentifier = 177
SymbolFullName  = 1*80PrintableASCII  ;  no default
```

T

TimeStamp – the time at which the STAMP message was sent.

```
FieldIdentifier = 56       ; no default
TimeStamp       = 20Digit ; YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
```

Note that for a retransmitted message, the value of TimeStamp is the time of the retransmission, not the transmission time of the original message.

TotalNumMessages – the total number of messages expected for a query response.

- Symbol Status message: Total number of symbols per stock group
- Order Book message: Total number of open orders per stock group

```
FieldIdentifier  = 112
TotalNumMessages = 1*8Digit  ;   no default
```

TotalNumOpenOrders – the total number of open orders per trading tier and ExchangeId.

```
FieldIdentifier    = 581       ;
TotalNumOpenOrders = 1*7Digit  ;  0 to 9,999,999
```

TotalNumStockGroups – the total number of stock groups per trading tier and ExchangeId.

```
FieldIdentifier     = 582  ;
TotalNumStockGroups = 1*3Digit
```

TotalNumSymbols – the total number of stocks per trading tier and ExchangeId.

```
FieldIdentifier = 583  ;
TotalNumSymbols = 1*5Digit
```

TradeCorrection – an indicator as to whether the Trade Report is a trade correction or a normal fill.

```
FieldIdentifier = 183
TradeCorrection = "Y" | "N"
```

TradeNumber – unique identifier assigned to each trade on a per stock basis.

```
FieldIdentifier = 220
TradeNumber     = 1*16Digit  ;   no default
```

TradeTimeStamp – the time at which the trade occurred, manually set when a trade is added by the source market.

```
FieldIdentifier = 264
TradeTimeStamp  = TimeStamp  ;   no default
```

TradingSysTimeStamp – the time at which the BusinessAction occurred.

```
FieldIdentifier     = 57
TradingSysTimeStamp = TimeStamp  ;   no default
```

TradingTierId – a Trading Engine identifier.

```
FieldIdentifier = 584  ;
TradingTierId   = 1*9Alphanumeric
```

V

VersionNumber – the version number of the STAMP protocol specification used.

```
FieldIdentifier = 65
VersionNumber   = "Version 5.4"
```

Volume – the quantity of shares for an order or a fill report.

```
FieldIdentifier = 64
Volume          = 1*10Digit  ;   no default
```

7.0 Field Identifiers by Numerical Order

5	BusinessAction
6	BusinessClass
11	CFOdOrderNumber
15	LasTSXquenceReceived
16	ConfirmationType
17	DestAddress
31	MinimumFillVolume
40	OrderNumber
41	Price
49	MGF-Volume
50	SequenceNumber
53	SettlementTerms
54	SourceAddress
55	Symbol
56	TimeStamp
57	TradingSysTimeStamp
58	Currency
64	Volume
68	PriorityVolume
70	BrokerNumber
74	LotsOf
76	ExtendedHours
80	StockHaltDate
97	Retrans
105	ProductType
110	AcceptAnonymous
111	NumberOfMessages
112	TotalNumMessages
113	LastMessage
114	LastSale
115	BoardLot
117	EquityStatus
119	FaceValue
120	OpeningTime
147	RetransId
150	Display Volume
159	MarketState
160	MessageText
161	StockState
168	NonResident
171	CUSIP
173	Comment
175	Best Price Guarantee
177	SymbolFullName
178	PriorityTimeStamp
183	TradeCorrection
191	CalculatedOpeningPrice
192	OrderKey
194	MBX-PartNumber
195	MBX-TotalParts
196	PublicPrice
197	MarketSide
199	SpecialistName
220	TradeNumber
247	ExchangeId
264	TradeTimeStamp
282	StockGroup
284	MGF-Setting
312	SpecialistPhoneNumber
317	BulletinIndicator
390	CROSSTYPE
392	TradeThroughExempt
490	BlindOffsetAccepted
491	CalculatedClosingPrice
492	ImbalanceSide
493	ImbalanceVolume
494	Moc
495	MocVwap
496	MocEligible
501	CdfPubTimeStamp
502	CdfRcvTimeStamp
503	ByPass
506	OrigTradeID
513	CdfId
514	CdfOutboundTimeStamp
515	CdfInboundTimeStamp
516	ListingTier
520	ShortExemptEligible
521	ExpiryDate
522	CouponFrequency
523	DividendFrequency
554	ListingMarket
581	TotalNumOpenOrders
582	TotalNumStockGroups
583	TotalNumSymbols
584	TradingTierId
605	AcceptUndisplayed

8.0 Field Identifiers by Alphabetical Order

This section lists the subset of STAMP tags (public fields) used in the CDF business content.

110	AcceptAnonymous
605	AcceptUndisplayed
490	BlindOffsetAccepted
115	BoardLot
70	BrokerNumber
317	BulletinIndicator
5	BusinessAction
6	BusinessClass
503	ByPass
491	CalculatedClosingPrice
191	CalculatedOpeningPrice
501	CdfPubTimeStamp
502	CdfRcvTimeStamp
11	CFOdOrderNumber
173	Comment
16	ConfirmationType
522	CouponFrequency
390	CROSS TYPE
58	Currency
171	CUSIP
17	DestAddress
150	Display Volume
523	DividendFrequency
117	EquityStatus
247	ExchangeId
521	ExpiryDate
76	ExtendedHours
119	FaceValue
492	ImbalanceSide
493	ImbalanceVolume
113	LastMessage
114	LastSale
15	LasTSXquenceReceived
554	ListingMarket
516	ListingTier
74	LotsOf
197	MarketSide
159	MarketState
194	MBX-PartNumber
195	MBX-TotalParts
160	MessageText
284	MGF-Setting
49	MGF-Volume
31	MinimumFillVolume
494	Moc
495	MocVwap
496	MocEligible
168	NonResident
111	NumberOfMessages
120	OpeningTime
192	OrderKey
40	OrderNumber
506	OrigTradeID
41	Price
178	PriorityTimeStamp
68	PriorityVolume
105	ProductType
196	PublicPrice
97	Retrans
147	RetransId
50	SequenceNumber
53	SettlementTerms
520	ShortExemptEligible
54	SourceAddress
199	SpecialistName
312	SpecialistPhoneNumber
282	StockGroup
80	StockHaltDate
161	StockState
55	Symbol
177	SymbolFullName
56	TimeStamp
112	TotalNumMessages
581	TotalNumOpenOrders
582	TotalNumStockGroups
583	TotalNumSymbols
183	TradeCorrection
220	TradeNumber
392	TradeThroughExempt
264	TradeTimeStamp
57	TradingSysTimeStamp
584	TradingTierId
64	Volume

9.0 Glossary

ATS	Alternative Trading System
BNF	Backus Naur Form
CFO	Change Former Order
COP	Calculated Opening Price
ETX	End Of Text
FOK	Fill Or Kill
GTC	Good To Cancel
MBF	Must Be Filled
MBX	Market By X
MGF	Minimum Guaranteed Fill
MOC	Market on Close
RT	Registered Trader
STAMP	Securities Trading Access Message Protocol
STX	Start Of Text

10.0 References

[1]	STAMP Specification, TSX
[2]	Toronto Broadcast Feed Specification
[3]	TMX IP *Protocol Specifications and Service Access*

Please Note:

Referenced documents and other documents related to TMX Information Processor products can be retrieved from the TMX Document portal at https://www.tcbdata.com/tmxequitymarkets/login.cfm .

REVISION HISTORY

VERSION	DATE	CHANGES
4.2	**NOVEMBER 13, 2013**	**Removed "N" as an Exchange Identifier from section 2.2** **Add the values "Y" for Lynx ATS as an Exchange Identifier from section 2.2** **Revise Tag 247 ExchangeId to include "LYX" for Lynx ATS** **Revised Tag 506 to include [TradeNumber] as a valid value** **Revised Tag 56 to include microsecond values**
4.1	MARCH 29, 2013	Correction to Section 4.2 (Symbol Status) and Section 4.4 (Stock Status) – replaced [SeekDarkLiquidity] (Alpha only) tags with [AcceptSDL] (Alpha only) tag.
4.0	JANUARY 25, 2013	- General clean up -Removed references to SigmaX Canada -Updates to Section 4.2 (Symbol Status)– added [SeekDarkLiquidity] (Alpha only) tag - Updates to Section 4.3 (Order Book). PublicPrice field made optional. - Updates to Section 4.4 (Stock Status) – Added [ListingMarket] (ChiX & CX2 only) and [SeekDarkLiquidity] (Alpha only) tags - Updates to Section 4.7 (Trade Report). Notes expanded and [TradeNumber] field made optional. - [2BrokerNumber] field made optional - [Bypass] field updated to one element field -[2TradeTimeStamp] field updated to two element field - Updates to Section 5.2 (CDF Trading Hours). Updated trading hours for Omega. Correction to trading hours for CNSX and Instinet. - Revisions made for Alpha's move to Quantum Trading Platform - Add the values "H" for CX2 - Revise Tag 247 ExchangeId to include "CHT" for CX2
3.5	December 6, 2011	Revise Tag 554 ListingMarket to include "X" for Alpha Listed Securities Added Tag 516 ListingTier to Symbol Status message. Values will include "AM" for Alpha Main Tier and "AV" for Alpha Venture Plus Tier.
3.4	March 31, 2011	Add the values "S" for TMX Select and "G" for SigmaX ATS Identifier in Transport Header Revise Tag 247 ExchangeId to include "SEL" for TMX Select and "SGM" for SigmaX ATS Added [Price] tag to Orderbook message Revise Tag 247 ExchangeId to include "AIS" for Alpha IntraSpread
3.3	February 9, 2011	Add the value "I" for Instinet Canada Cross Identifier in Transport Header "ICX" for Instinet Canada Cross
3.2	January 24, 2011	Add the value "N" for CNSX Exchange Identifier in Transport Header Add Tag 520 ShortExemptEligible to SymbolStatus messages. NOTE Tag 554 is only required for CDF-Omega Feed Add Tag 521 ExpiryDate to SymbolStatus messages. NOTE Tag 554 is only required for CDF-Omega Feed Add Tag 522 CouponFrequency to SymbolStatus messages. NOTE Tag 554 is only required for CDF-Omega Feed Add Tag 523 DividendFrequency to SymbolStatus messages. NOTE Tag 554 is only required for CDF-Omega Feed Add Tag 554 ListingMarket to SymbolStatus messages. NOTE Tag 554 is only required for CDF-Omega Feed Update Field Indentifers:

		Add Tag 522 CouponFrequency Add Tag 523 DividendFrequency Add Tag 521 ExpiryDate Add Tag 554 ListingMarket Add Tag 520 ShortExemptEligible Revise Tag 247 ExchangeId to include “CNQ” for CNSX Revise Tag 105 ProductType to include “Rights”, “Notes” and “Warrants”. Increase Tag 64 "Volume" value to 1*10 digits
3.1	October 15, 2010	Add Tag 605 AcceptUndisplayed to SymbolStatus message and StockStatus message. TSX and TSXV Only. Update Filed Identifiers
3.0	August 30, 2010	Removed reference to “TSX” and “TSXV” and replaced with “marketplace(s)” where comment is applicable to multi market centres. Removed UniqueMessageID Removed Buy Participation and Sell Participation Updated TradeNumber to field length up to 15 digits Updated MBX_PartNumber to field length up to 9 digits Updated MBX_Total Parts to field length up to 9 digits Removed Field Definitions from Sections 6, 7 and 8 that are not required for the CDF
2.1	January 25, 2010	Updated BusinessClass in the Field Definitions to include MarketInfo, SymbolInfo, OrderInfo Corrected Tag # for TradingTierID to 584 in Field Definitions
2.0	December 4, 2009	Updated/cleaned up the document Added UniqueMessageID field to the following Section 4.0 Business Content Messages: SymbolStatus Message, OrderBook Message, Order/Cancel Confirmation Report, Trade Report, Stock Status Notification, MBX Message, MOC Imbalance Notification 2.2 Transport Header: Updated Exchange Identifier Field 4.1 Trading Tier Status Message: Added Trading Tier Status Message section 4.2 SymbolStatus Message: Updated SymbolStatus Message description Changed Business Class “QueryResponse” to “SymbolInfo” Added the following fields: UniqueMessageID 4.3 OrderBook Message: Updated OrderBook Message description Changed Business Class “QueryResponse” to “OrderInfo” Corrected field “Price” to “PublicPrice” 5.1 Transmission Times: Added TradingTierStatus Message to Transmission Times 5.2 Trading Hours for the CDF: Updated Trading Hours for the CDF 6.0 References: Updated references 1, 2, and 3.
1.2	September 30, 2009	Added ExchangeId ALP
1.1	January 5, 2009	Added the following internal tags to identify messages in the consolidation process. Added CDFId to Control Header Content Added CDFInboundTimeStamp to Control Header Content Added CDFOutboundTimeStamp to Control Header Content

1.0	October 30, 2008	Increase length of Order Number Added ByPass tag to Order/Cancel Confirmation Report and Trade Report Added OrigTradeID tag to Trade Report Add OutsideQuote to Trade Report Remove All or None (AON) – no longer supported as order type
0.2	May 08, 2008	CDF timestamps defined to millisecond granularity Extended the Exchange Identifier in the Transport Header to include Pure Extended the ExchangeId to include Pure Extended the Exchange-Admin to include Pure Added clarification on Chi-X trading hours
0.1	March 18, 2008	Initial Release