

Ouch 2.0 US Treasury Specification

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1 Introduction

1.1 Purpose

This document presents the OUCH protocol subset used by the Currenex Orders service.

With the number of messages sent expected to at least double yearly, high-performance processing and networking are imperative to timely order messages delivery.

The Currenex OUCH service is delivered over reliable high-speed physical networks such as LAN cross connects or metro area direct circuits. It is not supported on Internet or other lower performance connections.

The following OUCH features

- No Compression:
 - Less processing time
 - Reduced latency
- Fixed Field Sizes:
 - Faster message parsing
 - Reduced memory management
- Integers Values
 - Where possible to suit faster message parsing
 - Enable end-to-end maximized scale performance for customers co-located in the Currenex datacenter.

2 Product Offering

OUCH supports following order types:

- Limit
- Iceberg

3 Protocol

OUCH uses the TCP protocol to process Market Participant (MP) submitted orders.

4 Message Data

An individual block is never larger than 1,000 bytes, but blocks can be sent out in groups exceeding 1,000 bytes in size.

4.1 Message Data Delimiters

The start and end of a message block are indicated by the one (1) byte ASCII character code decimal equivalents for "SOH" (1) and "ETX" (3):

- SOH (1) – indicates message block start
- ETX (3) – indicates message block end

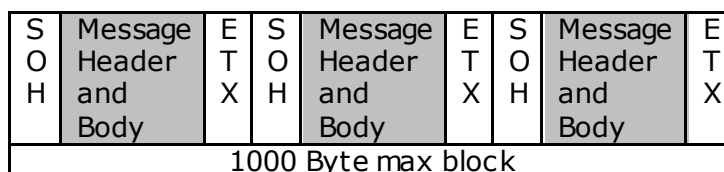


Figure 1: Sample Message Block Layout

4.2 Message Data

4.2.1 Integer, Long, Short

All integer, long and short fields are signed big-endian binary encoded numbers transmitted in network byte order.

4.2.2 Amount

Amount uses Long as a transfer data type, meaning it is an 8 bytes (64-bit) signed number with a minimum value of -9,223,372,036,854,775,808 and a maximum value of 9,223,372,036,854,775,807, inclusive.

Zero (0) is a valid value for some amount related fields; e.g., MinAmt. Amount values less than zero (0) are not valid.

Amounts associated with Itch US Treasury rates are always the notional amount of the instrument.

To account for values to the right of the decimal place, the amount value is a two (2) decimal place scaled value.

A decimal amount of 1,000,000.00 (1M) in notional amount would be represented as 0x5F5E100.

4.2.2.1 Outright Instruments

Amounts associated with Outright US Treasury instrument rates are always the notional amount of the instrument.

To account for values to the right of the decimal place, the amount value is a two (2) decimal place scaled value.

A decimal amount of 1,000,000.00 (1M) in notional amount would be represented as 0x5F5E100.

4.2.2.2 Spread Instruments

Amounts associated with Spread US Treasury instrument rates are always expressed in the integer number of contracts of that spread instrument.

Users should consult the Instrument Info message for the Spread Instrument to obtain the notional amount for each underlying leg that would be bought or sold for each one unit of the spread instrument purchased.

4.2.3 Rate

Rate fields are delivered as hexadecimal numbers. They are scaled to nine (9) places to the right of the decimal point into Long fields by multiplying 10^9 . E.g., 99.001953125 is represented as 0x170CF9EB65 or 99001953125 in decimal format. The maximum rate value allowed is 0x8000000000000000 or 9223372036854775807 in decimal, which represents a very high rate of 9223372036.854775807.

For a US Treasury instrument, bid and offer prices are quoted as a price as a percentage of par.

Information on the US Treasury instrument can be extracted from the “Instrument Info” message’s InstrumentID field.

4.2.4 Date / Time

Dates and times are handled as longs and counted in milliseconds from January 1, 1970 midnight coordinated universal time (UTC), more commonly known as Greenwich Mean Time (GMT).

There are three (3) types of date and timestamp reporting:

1. Message Header Timestamp: Is the number of milliseconds past midnight GMT on the current day.
2. Trade Message SettleDate/IssueDate/MaturityDate: those dates measured as the number of milliseconds from Jan 1, 1970 GMT.
3. Trade Message TradeDate: Trade date measured as milliseconds since Jan 1, 1970 GMT.

Note: Value date changes are applied at 5:30 PM ET

4.2.5 Text

The “Text” field can vary in size, contains alphanumeric characters and is left justified padded with spaces on the right.

5 Session

5.1 Open Session

A session is created after a MP submits a Logon message to Currenex and receives a Logon message in response from Currenex.

5.1.1 Incoming Sequence Number

A Logon message to Currenex must always be sent with sequence number set to one (1) on every session. The sequence number should increment by one (1) on every next incoming message.

NOTE: In the event an unexpected sequence number is detected in the message flow, the session will be closed and Logout message will be sent with error code = A10.

5.2 Terminate Session

Currenex or a MP can terminate a session by sending a Logout message. The recipient of a Logout message should respond with its own Logout message.

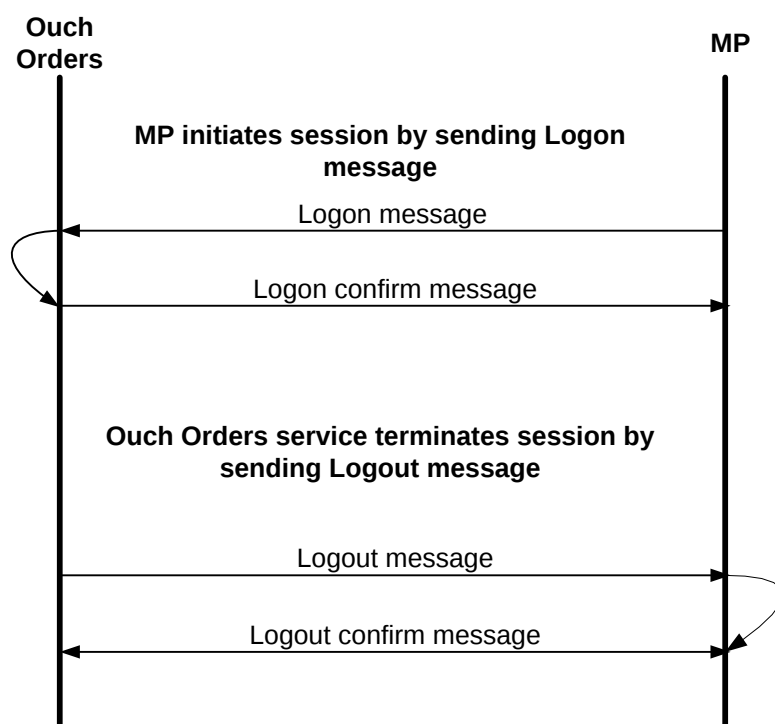


Figure 2: Initiate and Terminate Session

5.3 Heartbeat Messages

To ensure OUCH session integrity, Currenex sends a HeartBeat (HB) message every three (3) seconds. Upon receipt, a user must respond with its own HB message. Currenex will wait three (3) seconds for this response. If none is received, it will send another HB, again waiting three (3) seconds for a response. If again no HB response is received, the session will be treated as inactive and explicitly closed by Currenex.

In effect, if two (2) consecutive HB message responses from a client are missed, Currenex will treat the session as inactive and close it.

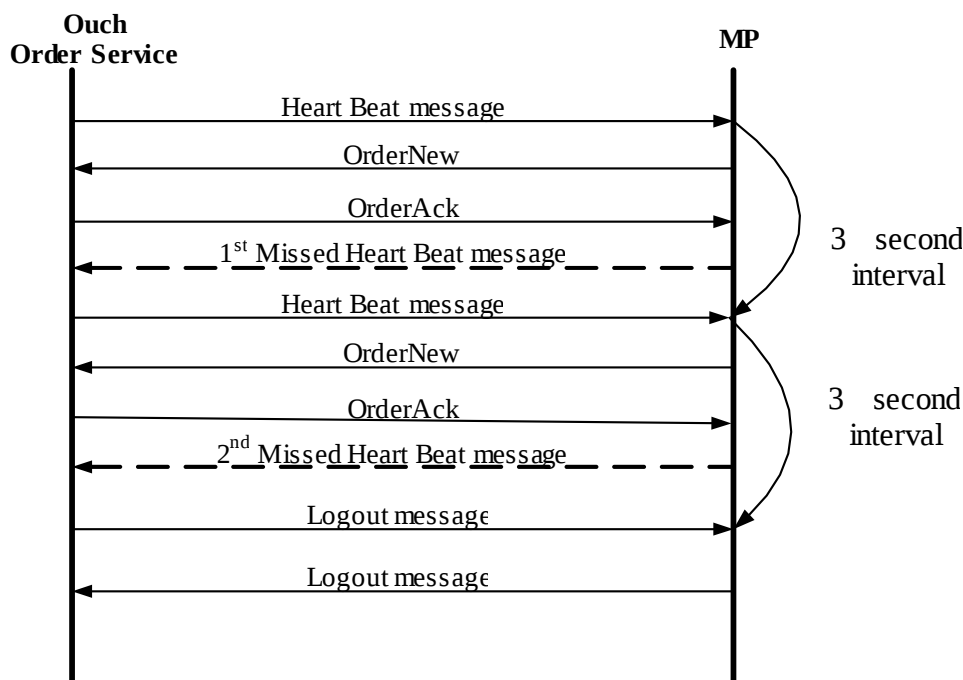


Figure 3: Missed Heartbeat Messages

5.4 Handling Invalid Messages

Currenex will respond with a Reject message to incorrectly formatted messages; messages with invalid headers will be dropped.

5.5 Persistence

Ouch persistence provides a means to receive missed order events if the connection to Currenex is lost or disconnects. An Ouch session, once created at the beginning of the trading week, will exist across multiple sequential physical connections. The outbound (from Currenex to client) sequence numbers of a new physical connection will continue from the current position of the persistent session. On reconnect the client can use the logon confirmation message sequence number to detect a gap since the last received message and send a resend request to obtain missed messages.

Please contact your Currenex account manager or Currenex Customer Support, support@currenex.com, to be configured for persistence.

5.5.1 Description

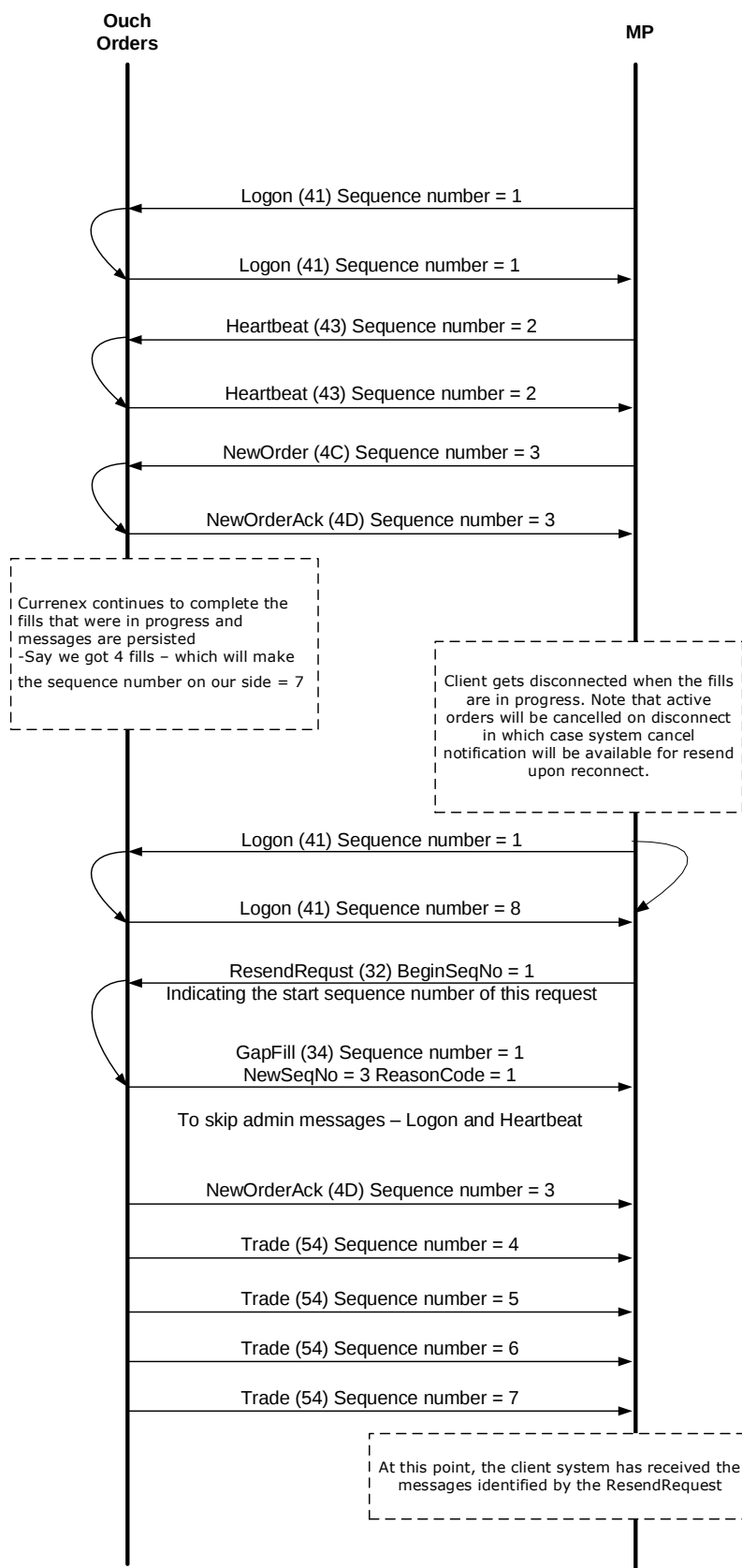
If on reconnection the client detects a gap in the sequence number, the client application can request all messages it missed using the message ResendRequest. The Currenex system then will retransmit persisted messages based on the request. The amount of messages retained is configurable.

All available requested messages will be resent exactly as they were originally sent (or enqueued) with the original sequence number and send timestamp, with the exception of Logon, Logout, and Heartbeat. A GapFill message with ReasonCode = NOT_RESENDABLE will be sent in lieu of these administrative messages. A GapFill message with ReasonCode = NOT_AVAILABLE will be sent in lieu of messages that are no longer available because they either fell outside of the configured retention window or were lost due to some serious system failure. Client should avoid submitting subsequent ResendRequest messages. This will simply replace the prior ResendRequest resulting in a delay of normal processing. Currenex will never send ResendRequest to a client.

5.5.2 Persistence and Performance

Persistence will have no adverse impact on the performance of an OUCH session. While a replay is underway, the incoming messages will be handled as normal; however, the outgoing notifications for new events will be queued until the replay is complete. The client might experience a delay depending on the duration of retransmission requested.

5.5.3 ResendRequest Message Flow



6 Instrument Information

After a successful Logon, a MP must send an “Instrument Info Request” message to which Currenex will respond with a series of “Instrument Info” messages. Instrument Info messages are sent for outright instruments using message type “D”. Instrument Info messages are sent for Spread Instruments using message type “e”. Each of these messages will detail the supported instruments and contain a pointer, “InstrumentIndex,” that must be used in all subsequent order related messages.

Note: The ‘InstrumentIndex’ returned in the ‘Instrument Info’ message is static for the scope of the session, only. The same value is not guaranteed to be used for a currency pair from session to session or across Ouch and ITCH services.

7 On Behalf Of (OBO) Trading / Order Routing

A MP with multiple trading entities can be configured to trade on behalf of each entity via a single OUCH connection. Note that on-behalf-of mappings must be defined on Currenex prior to use. Contact Currenex Integration Support for more details.

7.1 Routing User Information

After a successful Logon (Message Type a), MPs can optionally send a "RoutingUserInfoRequest" message to obtain the unique identifier of each routed entity. Currenex will respond with a series of "RoutingUserInfo" messages each containing the unique identifier of the routed user, both in long format called the RoutedUserKey and in string format called the RoutedUserId. Note that one such RoutingUserInfo message will also be sent identifying the Ouch session user.

If using the OBO feature, the RoutedUserKey must be treated as a reference and used in all subsequent order related messages.

If not using the OBO feature, Ouch users must encode 0 or -1 (default value) in the RoutedUserKey field. For all *outgoing* msgs that have the RoutedUserKey field, the field can be safely ignored

If trading for self, Ouch users can choose to populate the RoutedUserKey field with one of the following: 0, -1 or its own RoutedUserKey.

When a NewOrder message is submitted with a valid RoutedUserKey, the resulting trade is booked under the routed user as the customer user and the party of the routed user is labeled as the customer party on the trade.

When 0 or -1 is specified in the RoutedUserKey field, Currenex defaults the booking id to be the same as the SessionId used to establish the OUCH connection.

All incoming and outgoing order related messages must have RoutedUserKey present. Note that RoutedUserKey will not be present in any non-order related incoming or outgoing messages.

It is critical to note that order updates for any routed order will be sent to the routing session only. The routed user will not receive any such order updates. Other users either under the routing entity or under routed entity will also not receive any order updates resulting from order routing workflow.

8 Orders

8.1 Order Types

OUCH provides support for following order types:

- Limit
- Iceberg

8.2 Orders Message Flow

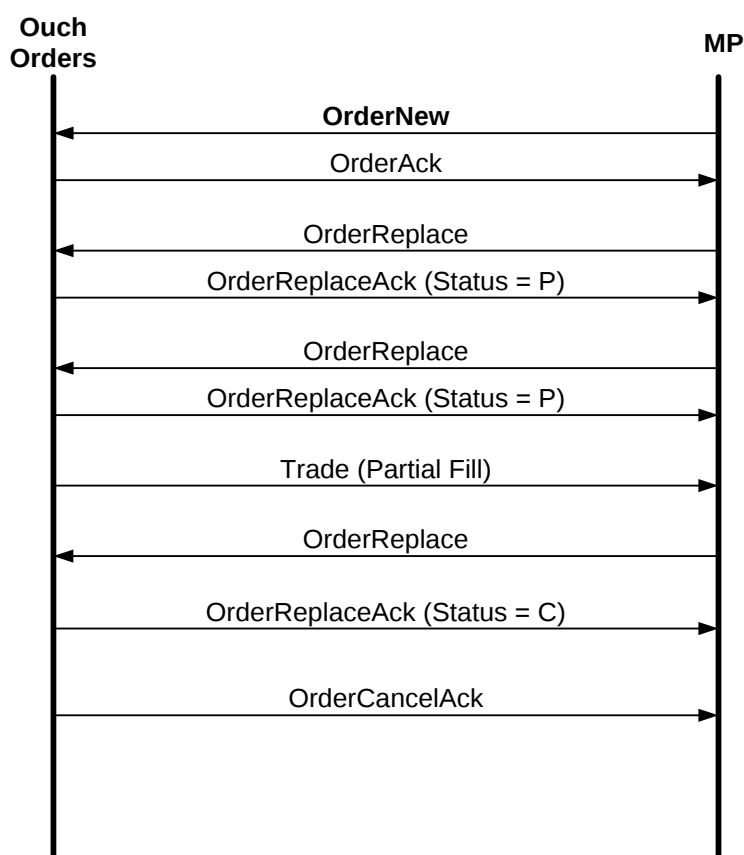


Figure 4: Basic Order Flow Example

8.3 Replace or Cancel Orders

OUCH provides support for cancel or replace order requests. Requests to cancel or replace orders no longer active will be rejected. If a replace request is made using the ReplaceOrCancel message ("P") on an order that has already been partially filled, the outstanding amount on that order will be cancelled. To replace the unfilled portion of a partially filled order, the ReplaceEvenIfPartiallyFilled message ("S") must be used.

The following fields can be modified on an order replace:

- Amount
- Rate

Both the Amount and Rate must be specified in a replace request, even if one of the values is unchanged.

8.3.1 Cancel Replace Acknowledgement Status

If in response to an Order ReplaceOrCancel message an OrderReplaceAck message is received with Status = "C", it indicates the order is already in process. The outstanding order can be filled in its entirety, cancelled in its entirety, or partially filled with the remainder cancelled, but a successful replace can no longer occur.

A separate confirmation report is always sent, so if the order had been cancelled a separate cancel message will be sent. If it is filled, a Trade report will be sent out.

8.4 Order Replace Even if Partially Filled

OUCH provides support for replacing orders regardless of whether the order has been partially filled. If the order has been partially filled, only the unfilled portion of the order will be replaced. This is done using the ReplaceEvenIfPartiallyFilled message ("S").

The following fields can be modified on an order replace:

- Amount
- Rate

When an order is replaced, the replace amount represents the entire order amount, including the portion that has already been partially filled. Thus, the replace amount must be greater than the amount already filled.

An OrderReplaceAck message with Status = "P" is returned in response to a ReplaceEvenIfPartiallyFilled message when the replace has been successful.

An OrderReplaceAck message with Status = "C" indicates the order is in process and is expected to be completely filled. It will be followed by a CancelOrderReject message indicating the replace was not successful.

An OrderReplaceAck message with Status = "R" indicates the request has been rejected due to the target order not being active.

8.5 Pending Fill and Cancel Workflow

The receipt of pending fill and resulting messages is an optional workflow. If not enabled, users receive only trade message (message type T for trades on outright instruments and message type F for trades on Spread Instruments) upon completion of trade. When pending fill workflow is enabled, users will receive pending fill message (message type U), followed by trade (message type t for trades on outright instruments or message type f for trades on spread instruments) after completion of trade.

8.5.1 Trade Pending Fill followed by Trade Confirm

The Pending Fill (U x55) will be sent to the client when the order is matched within Currenex matching engine. It will be ahead of the actual trade message (message type t for trades on outright instruments or message type f for trades on spread instruments) serving as an indication that the order is matched. The Pending Fill and Trade messages (message type t or f) can be linked with TradeLinkID. Note that the TradeLinkID is only unique within the scope of the order.

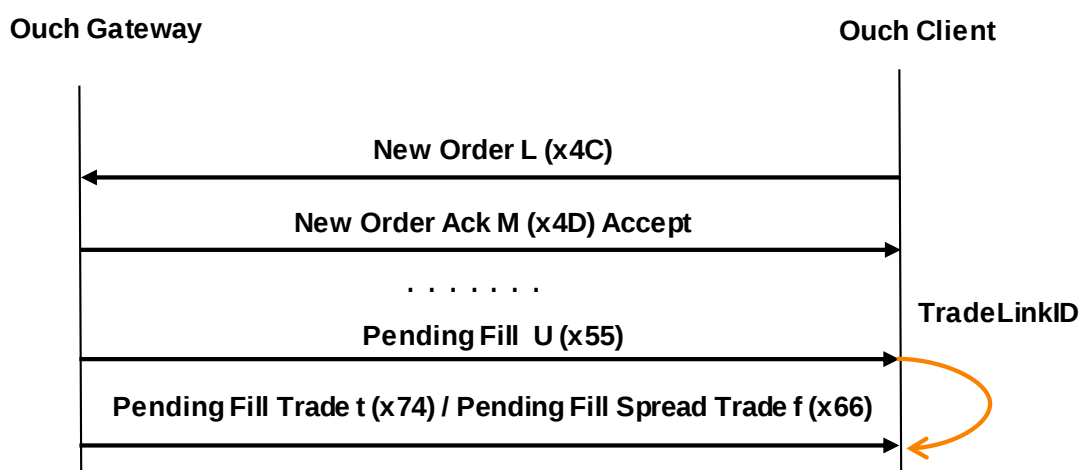


Figure 5: Pending Fill Followed by Trade Confirm

8.5.2 Trade Pending Fill followed by Pending Fill Cancel

After an order is matched, due to any reason if the matching engine could not complete the fill process, a Pending Fill Cancel (V x56) will be sent to the client. The order could be matched again. The Pending Fill and Fill Cancel can be linked with TradeLinkID.

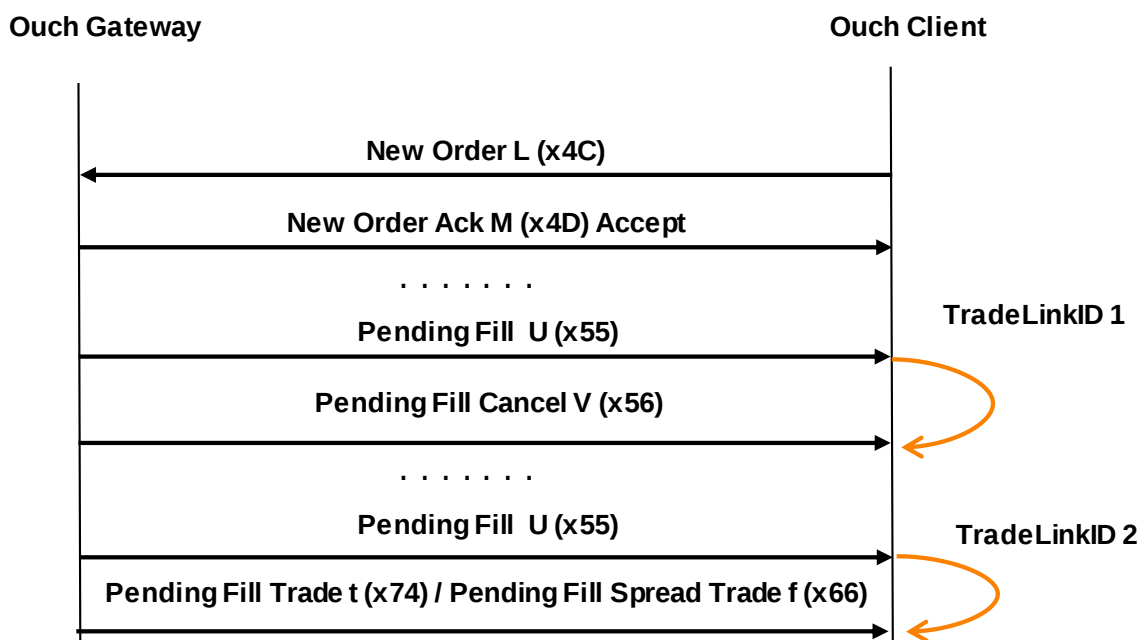


Figure 6: Pending Fill Followed by Cancel

8.6 Residual Amounts

If after a series of partial fills an order is left with an outstanding residual amount for less than one minimum order size, this amount will automatically be canceled by the system. Currenex will send an Order Canceled Message, Message Type R (x52), with "Type" set to 2 = "Below minimum cancel" to indicate the residual amount has been canceled.

8.7 Session Logouts and Disconnects

Currenex configures all OUCH ids with the "Cancel Orders upon Disconnect" feature enabled so that all active orders are canceled in the event of a logout or unplanned session termination. If a client prefers to maintain outstanding orders past a session's termination, this feature can be turned off upon request.

NOTE: an order that has been matched on a price just prior to a session's logoff or termination can still be filled even if the "Cancel Orders upon Disconnect" feature is on. To ensure accounting for all trades, Currenex recommends that its FIX Straight-through-Processing (STP) service, a separate guaranteed completed trade delivery service, be used.

9 Message Header

Field Name	Offset	Length	Type	Description	Example
Sequence number	0	4	Integer	Directional session based sequence number.	BC614E _{hex} (12345678 _{dec})
Timestamp	4	4	Integer	Number of milliseconds past midnight.	7BF7C5 _{hex} (8124357 _{dec} - milliseconds or 2hr 15min 24secs and 357millis)
Message Type	8	1	Alpha		41 _{hex} A _{char}

10 Messages

10.1 Logon (61)

Message Type a (x61) – Logon					
Field Name	Offset	Length	Type	Description	Example
UserID	9	20	Alpha	User session login id	4162635573657202020202020202020202020 _{hex} (AbcUser _{char})
Password	29	20	Alpha	User password	313233707377642020202020202020202020 _{hex} (123pswd _{char})
SessionID	49	4	Integer	Unique session ID provided by Currenex. NOTE: This field is only used by Currenex in response to Logon requests.	0000051b _{hex} (1307 _{dec})
Version	53	2	Short	Specifies the version of the service being requested. Supported version: 200	00C8 _{hex} (200 _{short})

10.2 Logout (42)

Message Type B (x42) - Logout					
Field Name	Offset	Length	Type	Description	Example
UserID	9	20	Alpha	User session login id	41626355736572020202020 2020202020202020 hex (AbcUser_{char})
SessionID	29	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})
Reason	33	3	Alpha	For full list of Logout Message Error Codes, refer to Appendix B.	

10.3 Heartbeat (43)

Message Type C (x43) - Heart Beat					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})

10.4 InstrumentInfoRequest (45)

Message Type E (x45)- Instrument Info Request					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})

10.5 Outright InstrumentInfo (44)

Message Type D (x44) - Instrument Info					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})
InstrumentIndex	13	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex} (5 _{dec})
InstrumentType	15	1	Alpha	Instrument Type: 31 _{hex} (1 _{char})- Foreign Exchange 32 _{hex} (2 _{char})- Cash Metals 33 _{hex} (3 _{char})- Treasury	33 _{hex} (3 _{char})
InstrumentID	16	20	Alpha	Free form instrument definition string.	4f54522d325952 _{hex} (OTR-2YR _{char})
SettlementDate	36	8	Long	Settlement date in milliseconds since Jan 1, 1970 GMT	00000139061b0e00 _{hex} (20120808-12:00:00,000 _{dec})
SecurityID	44	9	Alpha	CUSIP	393132373935354732 _{hex} (9127955G2 _{char})
SecurityType	53	1	Alpha	31 _{hex} (49 _{dec}) = TBill 32 _{hex} (50 _{dec}) = TNote 33 _{hex} (51 _{dec}) = TBond	31 _{hex} (49 _{dec})
MaturityDate	54	8	Long	Date of Maturity in in milliseconds since Jan 1, 1970 GMT NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
IssueDate	62	8	Long	Date on which offering is issued in milliseconds since Jan 1, 1970 GMT NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e00000001 _{hex} (1370093420514-09:34:08,000 _{dec})
InstrumentState	70	10	Alpha	Instrument State Supported values: 5749 _{hex} (W1 _{char}) – when-issued 4f5452 _{hex} (OTR _{char}) – On-the-Run contracts 4f4c44 _{hex} (OLD _{char}) – first Off-the-Run contracts 4f4c44 _{hex} (n) (OLD(n) _{char}) – other Off-the-Run contracts where n is from 1 to 60	4f4c44202020202020 _{hex} (OLD _{char})
InstrumentTenor	80	10	Alpha	Instrument Tenor	32591f _{hex} (2Y _{char})

10.6 Spread InstrumentInfo (65)

Message Type e (x65) – Spread Instrument Info					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})
InstrumentIndex	13	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex} (5 _{dec})
InstrumentType	15	1	Alpha	Instrument Type: 31 _{hex} (1 _{char}) – MLEG	31 _{hex} (1 _{char})
InstrumentID	16	20	Alpha	Free form instrument definition string.	4f54522f4f54522f412d3259522f335952 _{hex}
InstrumentState	36	15	Alpha	Instrument State	4f5452 2f4f54522f41 _{hex} (OTR/OTR/A _{char})
InstrumentTenor	51	10	Alpha	Instrument Tenor	32592f3359 _{hex} (2Y/3Y _{char})
InstrumentTick Size	61	8	Rate	Tick Size on the Spread Instrument. Values set as follows: • WI Rolls = 0.125 • All others = 0.05	2FAF080 _{hex} (0.05 _{dec})
AnchorLeg InstrumentIndex	69	2	Short	Numeric identifier for underlying Anchor Leg instrument identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0201 _{hex}
AnchorLeg InstrumentID	71	10	Alpha	Free form instrument definition string.	4f54522d3259 _{hex} (OTR-2Y _{char})
AnchorLeg InstrumentState	81	10	Alpha	Underlying Anchor Leg Instrument State	4f5452202020202020 _{hex} (OTR _{char})
AnchorLeg InstrumentTenor	91	5	Alpha	Underlying Anchor Leg Instrument Tenor	32591f _{hex} (2Y _{char})
AnchorLeg SecurityID	96	9	Alpha	CUSIP of the Anchor leg	393132373935354732 _{hex} (9127955G2 _{char})
AnchorLegRatio	105	8	Amount	Quantity of Underlying Anchor leg for each 1 unit of Spread Instrument	00000000000f4240 _{hex} (1000000 _{dec})
AnchorLegSide	113	1	Alpha	Direction of interest on underlying anchor leg for a buy of the spread instrument B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
CalculatedLeg InstrumentIndex	114	2	Short	Numeric identifier for underlying Calculated Leg instrument identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	01f9 _{hex}
CalculatedLeg InstrumentID	116	10	Alpha	Free form instrument definition string.	4f54522d3359 _{hex} (OTR-3Y _{char})
CalculatedLeg InstrumentState	126	10	Alpha	Underlying Calculated Leg Instrument State	4f5452202020202020 _{hex} (OTR _{char})

Information Classification: Confidential

Message Type e (x65) – Spread Instrument Info					
Field Name	Offset	Length	Type	Description	Example
CalculatedLegInstrumentTenor	136	5	Alpha	Underlying Calculated Leg Instrument Tenor	33591f _{hex} (3Y _{char})
CalculatedLegSecurityID	141	9	Alpha	CUSIP of the Calculated leg	393132373935354732 _{hex} (9127955G2 _{char})
CalculatedLegRatio	150	8	Amount	Quantity of Underlying Calculated leg for each 1 unit of Spread Instrument	0000000000f4240 _{hex} (1000000 _{dec})
CalculatedLegSide	158	1	Alpha	Direction of interest on underlying calculated leg for a buy of the spread instrument B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	S _{char} (53 _{hex})

10.7 RoutingUserInfoRequest (47)

Message Type G (x47)- RoutingUserInfoRequest					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})

10.8 RoutingUserInfo (67)

Message Type g (x67) - RoutingUserInfo					
Field Name	Offset	Length	Type	Description	Example
SessionID	9	4	Integer	Unique session ID provided by Currenex.	0000051b _{hex} (1307 _{dec})
RoutedUserId	13	20	Alpha	String representation that uniquely identified a routed user.	526f757465645573657231 _{hex} (RoutedUser1 _{char})
RoutedUserKey	33	4	Integer	Numeric representation of the routed user that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.9 NewOrder (4C)

Message Type L (x4C) - NewOrderRequest					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned order id.	1bc4e9ef _{hex} (465889775 _{dec})
OrderType	13	1	Alpha	Order type, values: F _{char} (46 _{hex}) - Limit Order Z _{char} (5a _{hex}) - Iceberg	46 _{hex} (F _{char})
InstrumentIndex	14	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
Side	16	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})

Information Classification: Confidential

Message Type L (x4C) - NewOrderRequest					
Field Name	Offset	Length	Type	Description	Example
OrderAmt	17	8	Long	Order amount in notional amount scaled to two (2) places	0000000003d0b27 _{hex} (40,005.51 _{dec})
MinAmt	25	8	Long	Minimum quantity for which order can be executed.	0000000003d0900 _{hex} (40000.00 _{dec})
Price	33	8	Rate	Order rate. Divide decimal equivalent by 10 ⁹ to get the actual rate.	000000170CF9EB65 _{hex} (99.001953125 _{dec})
ShowAmt	41	8	Long	On Iceberg orders, the amount of the order that will be displayed to the market. Valid values are MinAmt <= ShowAmt <= OrderAmt, or if set to 0, the order becomes hidden; i.e. is not shown in the market. For Limit orders, all values are ignored.	000000007ffffff _{hex} (21,474,836.47 _{dec})
ExpireType	49	1	Alpha	Expiration type, values: G _{char} (47 _{hex}) - Good Till Cancel (GTC) I _{char} (49 _{hex}) - Immediate Or Cancel (IOC) sweeps book once, if no match is found the order is canceled. Partial fills are permitted.	47 _{hex} (G _{char})
RoutedUserKey	50	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services. Encode 0 or -1 if not routing for another entity.	00000531 _{hex} (1329 _{dec})

10.10 NewOrderAck (4D)

Message Type M (x4D) – NewOrderAck					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned order id.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order. Note: set to "-1" in case of reject.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
Status	21	1	Alpha	New Order acknowledge type, values: R _{char} (52 _{hex}) - rejected C _{char} (43 _{hex}) - confirmed	43 _{hex} (C _{char})
ErrorCode	22	2	Short	Error Code from 1 to 99 in case of reject. 0 for Status set to "confirm." Refer to Appendix A for a complete error code listing.	0000 _{hex} (0 _{dec})
RoutedUserKey	24	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.11 CancelOrder (4E)

Message Type N (x4E) - OrderCancelRequest					
Field Name	Offset	Length	Type	Description	Example
NewClOrderID	9	4	Integer	Client assigned id for the cancel action.	1bc4ed5d _{hex} (465890653 _{dec})
PrevClOrderID	13	4	Integer	Client assigned id for the order to be cancelled.	1bc4ed57 _{hex} (465890647 _{dec})
InstrumentIndex	17	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
RoutedUserKey	19	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.12 OrderCancelReject (4F)

Message Type O (x4F)- OrderCancelReject					
Field Name	Offset	Length	Type	Description	Example
NewClOrderID	9	4	Integer	Client assigned order id.	1bc4ed5d _{hex} (465890653 _{dec})
PrevClOrderID	13	4	Integer	Client assigned id for the order to be cancelled.	1bc4ed57 _{hex} (465890647 _{dec})
ErrorCode	17	2	Short	Error Code from 1 to 99 in case of reject. Refer to Appendix A for a complete error code listing.	0001 _{hex} (1 _{dec})
RoutedUserKey	19	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.13 Order Replace Request Alternatives

10.13.1 OrderReplaceorCancel (50)

Message Type P (x50) - OrderReplaceOrCancelRequest					
Field Name	Offset	Length	Type	Description	Example
NewClOrderID	9	4	Integer	Client assigned id for the replace or cancel action.	282c2db1 _{hex} (673983921 _{dec})
OrigClOrderID	13	4	Integer	Client assigned id for the order to be replaced or cancelled.	1d2c2db1 _{hex} (489434545 _{dec})
OrderAmt	17	8	Long	New order amount	0000000003d0b27 _{hex} (40,005.51 _{dec})
Price	25	8	Rate	New order rate Multiply rate as a decimal value by 10 ⁹ then convert to hexadecimal.	000000170CF9EB65 _{hex} (99.001953125 _{dec})
InstrumentIndex	33	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
RoutedUserKey	35	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.13.2 OrderReplaceEvenIfPartiallyFilled (53)

Message Type S (x53) - OrderReplaceEvenIfPartiallyFilled					
Field Name	Offset	Length	Type	Description	Example
NewClOrderID	9	4	Integer	Client assigned id for the replace action.	282c2db1 _{hex} (673983921 _{dec})
OrigClOrderID	13	4	Integer	Client assigned id for the order to be replaced.	1d2c2db1 _{hex} (489434545 _{dec})
OrderAmt	17	8	Long	New order amount	0000000003d0b27 _{hex} (40,005.51 _{dec})
Price	25	8	Rate	New order rate Multiply rate as a decimal value by 10 ⁹ then convert to hexadecimal.	000000170CF9EB65 _{hex} (99.001953125 _{dec})
InstrumentIndex	33	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
RoutedUserKey	35	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.14 OrderReplaceAck (51)

Message Type Q (x51) – OrderReplaceAck					
Field Name	Offset	Length	Type	Description	Example
NewClOrderD	9	4	Integer	Client assigned id for the replace action.	282c2db1 _{hex} (673983921 _{dec})
PrevClOrderID	13	4	Integer	Client assigned id for the order to be replaced.	1d2c2db1 _{hex} (489434545 _{dec})
Status	17	1	Alpha	Cancel order acknowledge type, values: C _{char} (43 _{hex}) - cancel R _{char} (52 _{hex}) - rejected P _{char} (50 _{hex}) - replaced	50 _{hex} (P _{char})
ErrorCode	18	2	Short	Error Code from 1 to 99 in case of reject. 0 for Status set to "confirm". Refer to Appendix A for a complete error code listing.	0000 _{hex} (0 _{dec})
RoutedUserKey	20	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.15 OrderCancelledorExpired (52)

Message Type R (x52) – Unsolicited Cancel					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
Status	21	1	Alpha	Cancel order acknowledge type, values: E _{char} (45 _{hex}) - expired C _{char} (43 _{hex}) - cancelled	43 _{hex} (C _{char})
Type	22	2	Short	0 _{dec} (0 _{hex}) – User cancel 1 _{dec} (1 _{hex}) – System cancel 2 _{dec} (2 _{hex}) – Below minimum cancel	0 _{hex} (0 _{dec})
RoutedUserKey	24	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.16 Pending Fill Workflow Messages

10.16.1 PendingFillMessage (55)

Message Type U (x55) – Pending Fill					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})

Message Type U (x55) – Pending Fill					
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: unique only in the scope of the order	15 _{hex} (21 _{dec})
FillAmt	25	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	33	8	Long	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
AggressorFlag	41	1	Alpha	1 _{char} (31 _{hex}) - client is aggressor (aggressor) 2 _{char} (32 _{hex}) –clientis not the aggressor (aggresed) Indicates whether the maker's price was resting in the book or came into the book at the time of the match.	32 _{hex} (2 _{char})
ExecBroker	42	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
RoutedUserKey	46	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.16.2 PendingFillCancel (56)

Message Type V (x56) – Pending Fill Cancel					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: unique only in the scope of the order	15 _{hex} (21 _{dec})
FillAmt	25	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	33	8	Long	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})

Information Classification: Confidential

Message Type V (x56) – Pending Fill Cancel					
AggressorFlag	41	1	Alpha	1 _{char} (31 _{hex}) - client is aggressor (aggressor) 2 _{char} (32 _{hex}) – client is not the aggressor (aggessed) Indicates whether the maker's price was resting in the book or came into the book at the time of the match.	32 _{hex} (2 _{char})
ExecBroker	42	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
RoutedUserKey	46	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.16.3 Outright PendingFillTrade (74)

Message Type t (x74) – Pending Fill Trade					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: unique only in the scope of the order	15 _{hex} (21 _{dec})
InstrumentIndex	25	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
Side	27	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
FillAmt	28	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	36	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
ExecBroker	44	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
ExecutionID	48	20	Alphanumeric	Trade ID.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
ExecType	68	1	Alpha	Execution Type, values: 1 _{char} (31 _{hex}) – new trade	31 _{hex} (1 _{char})
SettleDate	69	8	Long	Settlement date. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)

Message Type t (x74) – Pending Fill Trade					
Field Name	Offset	Length	Type	Description	Example
TradeDate	77	8	Long	Trade date, trades completed after trade roll over time will show next business date. Time is in millis from Jan 1, 1970 GMT.	0000013900f4b200 _{hex} (20120807-12:00:00,000)
TransactTime	85	8	Long	Match transaction date time in millis from Jan 1, 1970 GMT.	000001390086e6a0 _{hex} (20120707-10:00:04,512)
LeavesAmt	93	8	Long	Order amount opened for further execution. NOTE: set to 0 if ExecType is not set to 1 (new trade).	0000000002FAF080 _{hex} (500,000.00 _{dec})
SecurityID	101	9	Alpha	CUSIP	393132373935354732 _{hex} (9127955G2 _{char})
MaturityDate	110	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
IssueDate	118	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e00000001 _{hex} (1370093420514-09:34:08,000 _{dec})
CouponRate	126	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})
PriceType	134	1	Alpha	1 _{char} (31 _{hex}) - Price (percent of par) 2 _{char} (32 _{hex}) - Discount 3 _{char} (33 _{hex}) - Yield	31 _{hex} (1 _{char})
AggressorFlag	135	1	Alpha	Aggressor flag: 1 _{char} (31 _{hex}) - client is aggressor 2 _{char} (32 _{hex}) - client is not aggressor	32 _{hex} (2 _{char})
RoutedUserKey	136	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.16.4 Spread PendingFillTrade (66)

Message Type f (x66) – Pending Fill Spread Trade					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: unique only in the scope of the order	15 _{hex} (21 _{dec})
InstrumentIndex	25	2	Short	Numeric identifier for currency pair identified by the Instrument ID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}

Message Type f (x66) – Pending Fill Spread Trade					
Field Name	Offset	Length	Type	Description	Example
Side	27	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
FillAmt	28	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	36	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	2FAF080 _{hex} (0.05 _{dec})
ExecBroker	44	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
ExecutionID	48	20	Alphan umeric	Trade ID.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
ExecType	68	1	Alpha	Execution Type, values: 1 _{char} (31 _{hex}) – new trade	31 _{hex} (1 _{char})
TradeDate	69	8	Long	Trade date, trades completed after trade roll over time will show next business date. Time is in millis from Jan 1, 1970 GMT.	0000013900f4b200 _{hex} (20120807-12:00:00,000)
TransactTime	77	8	Long	Match transaction date time in millis from Jan 1, 1970 GMT.	000001390086e6a0 _{hex} (20120707-10:00:04,512)
LeavesAmt	85	8	Long	Order amount opened for further execution. NOTE: set to 0 if ExecType is not set to 1 (new trade).	0000000002FAF080 _{hex} (500,000.00 _{dec})
PriceType	93	1	Alpha	4 _{char} (34 _{hex}) – Rate Differential (Quoted in Basis Points difference)	4 _{char} (34 _{hex})
AggressorFlag	94	1	Alpha	Aggressor flag: 1 _{char} (31 _{hex}) - client is aggressor 2 _{char} (32 _{hex}) – client is not aggressor	32 _{hex} (2 _{char})
AnchorLeg InstrumentIndex	95	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
AnchorLeg SecurityID	97	9	Alpha	CUSIP of Anchor Leg Trade	393132373935354732 _{hex} (9127955G2 _{char})
AnchorLeg MaturityDate	106	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
AnchorLeg IssueDate	114	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e00000001 _{hex} (1370093420514- 09:34:08,000 _{dec})
AnchorLeg CouponRate	122	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})
AnchorLegSide	130	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
AnchorLegFill Rate	131	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
AnchorLegFill Amt	139	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})

Information Classification: Confidential

Message Type f (x66) – Pending Fill Spread Trade					
Field Name	Offset	Length	Type	Description	Example
AnchorLegYield	147	8	Rate	Yield to Maturity for trade on underlying Anchor Leg	000000000d71ae7d _{hex} (2.25554045 _{dec})
AnchorLegPrice Type	155	1	Alpha	1char (31hex) - Price (percent of par) 2char (32hex)- Discount 3char (33hex) - Yield	1 _{char} (31 _{hex})
AnchorLegSettlement Date	156	8	Date	Settlement date for Underlying Anchor Leg. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)
AnchorLegExecutionID	164	20	Alphanumeric	Trade ID for underlying anchor leg.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
CalculatedLegInstrumentIndex	184	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
CalculatedLegSecurityID	186	9	Alpha	CUSIP of Calculated Leg Trade	393132373935354732 _{hex} (9127955G2 _{char})
CalculatedLegMaturityDate	195	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
CalculatedLegIssueDate	203	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e00000001 _{hex} (1370093420514-09:34:08,000 _{dec})
CalculatedLegCouponRate	211	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})
CalculatedLegSide	219	1	Alpha	Order side, values: Bchar (42hex) = Buy Schar (53hex) = Sell	42 _{hex} (B _{char})
CalculatedLegFillRate	220	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
CalculatedLegFillAmt	228	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
CalculatedLegYield	236	8	Rate	Yield to Maturity for trade on underlying Calculated Leg	0000000013678f7c _{hex} (3.25554044 _{dec})
CalculatedLegPriceType	244	1	Alpha	1char (31hex) - Price (percent of par) 2char (32hex)- Discount 3char (33hex) - Yield	1 _{char} (31 _{hex})
CalculatedLegSettlementDate	245	8	Date	Settlement date for Underlying Calculated Leg. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)
CalculatedLegExecutionID	253	20	Alphanumeric	Trade ID for underlying calculated leg.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
RoutedUserKey	273	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.17 Non-Pending Fill Workflow Messages

10.17.1 OutrightTrade (54)

Message Type T (x54) - Trade					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
InstrumentIndex	21	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
Side	23	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
FillAmt	24	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	32	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
ExecBroker	40	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
ExecutionID	44	20	Alphanumeric	Trade ID.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
ExecType	64	1	Alpha	Execution Type, values: 1 _{char} (31 _{hex}) – new trade	31 _{hex} (1 _{char})
SettleDate	65	8	Long	Settlement date. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)
TradeDate	73	8	Long	Trade date, trades completed after trade roll over time will show next business date. Time is in millis from Jan 1, 1970 GMT.	0000013900f4b200 _{hex} (20120807-12:00:00,000)
TransactTime	81	8	Long	Match transaction date time in millis from Jan 1, 1970 GMT.	000001390086e6a0 _{hex} (20120707-10:00:04,512)
LeavesAmt	89	8	Long	Order amount opened for further execution. NOTE: set to 0 if ExecType is not set to 1 (new trade).	0000000002FAF080 _{hex} (500,000.00 _{dec})
SecurityID	97	9	Alpha	CUSIP	393132373935354732 _{hex} (9127955G2 _{char})
MaturityDate	106	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
IssueDate	114	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e00000001 _{hex} (1370093420514-09:34:08,000 _{dec})
CouponRate	122	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})

Message Type T (x54) - Trade					
Field Name	Offset	Length	Type	Description	Example
PriceType	130	1	Alpha	1 _{char} (31 _{hex}) - Price (percent of par) 2 _{char} (32 _{hex}) - Discount 3 _{char} (33 _{hex}) - Yield	31 _{hex} (1 _{char})
AggressorFlag	131	1	Alpha	Aggressor flag: 1 _{char} (31 _{hex}) - client is aggressor 2 _{char} (32 _{hex}) - client is not aggressor	32 _{hex} (2 _{char})
RoutedUserKey	132	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.17.2 SpreadTrade (46)

Message Type F (x46) – Spread Trade					
Field Name	Offset	Length	Type	Description	Example
ClOrderID	9	4	Integer	Client assigned id for the order.	1bc4e9ef _{hex} (465889775 _{dec})
OrderID	13	8	Long	Currenex assigned id for the order.	000000026c8dfbb4 _{hex} (10411178932 _{dec})
InstrumentIndex	21	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
Side	23	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
FillAmt	24	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
FillRate	32	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	2FAF080 _{hex} (0.05 _{dec})
ExecBroker	40	4	Alpha	Execution broker's code, or NA	4e412020 _{hex} (NA _{char})
ExecutionID	44	20	Alphan umeric	Trade ID.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
ExecType	64	1	Alpha	Execution Type, values: 1 _{char} (31 _{hex}) – new trade	31 _{hex} (1 _{char})
TradeDate	65	8	Long	Trade date, trades completed after trade roll over time will show next business date. Time is in millis from Jan 1, 1970 GMT.	0000013900f4b200 _{hex} (20120807-12:00:00,000)
TransactTime	73	8	Long	Match transaction date time in millis from Jan 1, 1970 GMT.	000001390086e6a0 _{hex} (20120707-10:00:04,512)
LeavesAmt	81	8	Long	Order amount opened for further execution. NOTE: set to 0 if ExecType is not set to 1 (new trade).	0000000002FAF080 _{hex} (500,000.00 _{dec})
PriceType	89	1	Alpha	4 _{char} (34 _{hex}) – Rate Differential (Quoted in Basis Points difference)	4 _{char} (34 _{hex})

Message Type F (x46) – Spread Trade					
Field Name	Offset	Length	Type	Description	Example
AggressorFlag	90	1	Alpha	Aggressor flag: 1 _{char} (31 _{hex}) - client is aggressor 2 _{char} (32 _{hex}) – client is not aggressor	32 _{hex} (2 _{char})
AnchorLegInstrumentIndex	91	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
AnchorLegSecurityID	93	9	Alpha	CUSIP of Anchor Leg Trade	393132373935354732 _{hex} (9127955G2 _{char})
AnchorLegMaturityDate	102	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
AnchorLegIssueDate	110	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e000000001 _{hex} (1370093420514-09:34:08,000 _{dec})
AnchorLegCouponRate	118	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})
AnchorLegSide	126	1	Alpha	Order side, values: B _{char} (42 _{hex}) = Buy S _{char} (53 _{hex}) = Sell	42 _{hex} (B _{char})
AnchorLegFillRate	127	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
AnchorLegFillAmount	135	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
AnchorLegYield	143	8	Rate	Yield to Maturity for trade on underlying Anchor Leg	000000000d71ae7d _{hex} (2.25554045 _{dec})
AnchorLegPriceType	151	1	Alpha	1 _{char} (31 _{hex}) - Price (percent of par) 2 _{char} (32 _{hex}) - Discount 3 _{char} (33 _{hex}) - Yield	1 _{char} (31 _{hex})
AnchorLegSettlementDate	152	8	Date	Settlement date for Underlying Anchor Leg. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)
AnchorLegExecutionID	160	20	Alphanumeric	Trade ID for underlying anchor leg.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
CalculatedLegInstrumentIndex	180	2	Short	Numeric identifier for currency pair identified by the InstrumentID; unique for the session scope, only. Not guaranteed to be the same from session to session or across Ouch and Itch services.	0005 _{hex}
CalculatedLegSecurityID	182	9	Alpha	CUSIP of Calculated Leg Trade	393132373935354732 _{hex} (9127955G2 _{char})
CalculatedLegMaturityDate	191	8	Long	Date of Maturity in decimal format NOTE: in case of maturity date being absent. 0 will be set as the value.	0000013c00483e00 _{hex} (20130103-12:00:00,000 _{dec})
CalculatedLegIssueDate	199	8	Long	Date of Issue in decimal format NOTE: in case of issue date being absent. 0 will be set as the value.	3c00483e000000001 _{hex} (1370093420514-09:34:08,000 _{dec})

Message Type F (x46) – Spread Trade					
Field Name	Offset	Length	Type	Description	Example
CalculatedLeg CouponRate	207	8	Rate	Coupon Rate NOTE: in case of coupon rate being absent. 0 will be set as the value.	1CBBF2F34E _{hex} (123.412345678 _{dec})
CalculatedLeg Side	215	1	Alpha	Order side, values: Bchar (42hex) = Buy Schar (53hex) = Sell	42 _{hex} (B _{char})
CalculatedLeg FillRate	216	8	Rate	Done trade rate. Divide decimal equivalent by 10 ⁹ to get the actual rate	000000170CF9EB65 _{hex} (99.001953125 _{dec})
CalculatedLeg FillAmt	224	8	Long	Trade amount	00000000017d7840 _{hex} (250,000.00 _{dec})
CalculatedLeg Yield	232	8	Rate	Yield to Maturity for trade on underlying Calculated Leg	0000000013678f7C _{hex} (3.25554044 _{dec})
CalculatedLeg PriceType	240	1	Alpha	1char (31hex) - Price (percent of par) 2char (32hex)- Discount 3char (33hex) - Yield	31 _{hex} (1 _{char})
CalculatedLeg SettlementDate	241	8	Date	Settlement date for Underlying Calculated Leg. Time is in millis from Jan 1, 1970 GMT.	000001390b416a00 _{hex} (20120809-12:00:00,000)
CalculatedLeg ExecutionID	249	20	Alphan umeric	Trade ID for underlying calculated leg.	4132303132323230303634 4a4230302020202020 _{hex} (A2012220064JB00 _{char})
RoutedUserKey	269	4	Integer	Numeric representation of the string that uniquely identifies a routed user; Same from session to session or across Ouch and Itch services.	00000531 _{hex} (1329 _{dec})

10.18 ResendRequest (32)

Message Type 2 (32 _{hex}) – ResendRequest					
Field Name	Offset	Length	Type	Description	Example
BeginSeqNo	9	4	Integer	Message sequence number of first message in the range to be resent.	00016842hex (92226dec)

10.19 GapFill (34)

Message Type 4 (34 _{hex}) – GapFill					
Field Name	Offset	Length	Type	Description	Example
NewSeqNo	9	4	Integer	The sequence number of the next message to be transmitted	075BCD15hex (123456789dec)
ReasonCode	13	1	Alpha	1char(31hex) = NOT_RESENDABLE 2char(32hex) = NOT_AVAILABLE	1char(31hex)

Appendix

Appendix A : Error Codes

Reason Codes _{hex}	Description
0000	No Error
0001	Invalid Instrument
0002	Invalid Side
0003	Invalid Price
0004	Invalid Expiry
0005	Invalid Amount
0006	Invalid Show Amount
0007	Invalid Permission
0008	Invalid Order
0009	Invalid Order Type
000a	Invalid Client Order Id
000b	Invalid Credit
000c	Maximum Permitted Operations Exceeded
000d	Invalid New Client Order – returned when an order to be replaced has already been filled.
000e	Order not Active
000f	Invalid Specified Amount
0010	Maximum Number of Active Orders Exceeded
0011	Rate precision error
0012	Invalid Settlement Date
0013	Cannot Replace Inactive Order
0014	Order Min Greater Than System Min Max
0015	Invalid Limit Rate Error
0016	SEF Validation Failed
0017	Cannot Replace Already Filled
0018	Cannot Replace Order Is In Process
0019	Cannot Cancel Already Filled
001A	Absolute Trading Limit Exceeded
001B	Application Not Available
001C	Trading Disabled Off Hours
001D	No Execution Relationship set up
001E	Invalid Routing User Permission
0063	Invalid Error

Appendix B : Logout Message Reason Codes

Logout Message Reason Codes	
Reason Codes	Description
A1	Replaced by New Session
A2	Session Timed Out
A3	Invalid Session Id
A4	Internal Session Error
A5	Authentication Failure
A6	User Logout
A7	Failed Message Delivery
A8	Internal Session Closed
A9	Second Missed Heartbeat
A10	Invalid First Sequence Number
A11	Invalid version

Revision History

Revision Number	Revision Date	Page Number	Update
1	21 February 2022	*	Ouch 2.0 document created