Ouch Order Service Specification

Please contact Currenex sales representatives and help desk personnel for more information on this documentation.

Contents

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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

The start and end of a block are indicated by the one (1) byte ASCII character code decimal codes “SOH” (1) and “ETX” (3).

Refer to Figure 1 for a sample message block layout.

SOH	Message Header and Body	ETX	SOH	Message Header and Body	ETX	SOH	Message Header and Body	ETX

Figure 1: Message block

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

All delimiters must be specified in there ASCII character code decimal equivalents.

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

4.2 Message Data

4.2.1 Integer, Long, Short

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

4.2.2 Amount

Amounts are using Long as a transfer data type. NOTE: the Long data type is an 8 bytes (64-bit) signed 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). The amount value is a two (2) decimal places scaled value to the right of the decimal point into the Long. fZero (0) is accepted for some amount fields; e.g., MinAmt. Values less than zero (0) are not permitted.

Amounts associated with Foreign Exchange (Forex) rates are always in the base or first currency of the streamed currency pair; e.g., a EUR/USD amount is always in terms of EUR.

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

4.2.3 Rate

Rate fields are entered as hexadecimal numbers. They are scaled to five (5) places to the right of the decimal point into integer fields by multiplying 10^5. E.g., 94.90870 is represented as $0x90D1B6_{hex}$ or 9490870 in decimal format. The maximum rate value allowed is $0x7FFFFFFF_{hex}$ or 2147483647 in decimal, which represents a very high rate of 21474.83647.

For a currency pair CCY1/CCY2, Forex bid and offer prices are quoted as a variable amount of term currency, CCY2, per one (1) unit of the base currency, CCY1.

The base and term currencies 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 in the messages:

1. Message Header Timestamp: Is the number of milliseconds past midnight GMT on the current day.
2. Trade Message SettleDate: Settlement date 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: Trades completed after the trade roll over time will show as entered on the next business date. Day order and good till date order expiry times are applied as follows:

7 a.m. New Zealand Standard Time (NZST)/New Zealand Daylight Time (NZDT) for all NZD orders.

5 p.m. Eastern Standard Time (EST)/Eastern Daylight TIME (EDT) for all non NZD orders.

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.

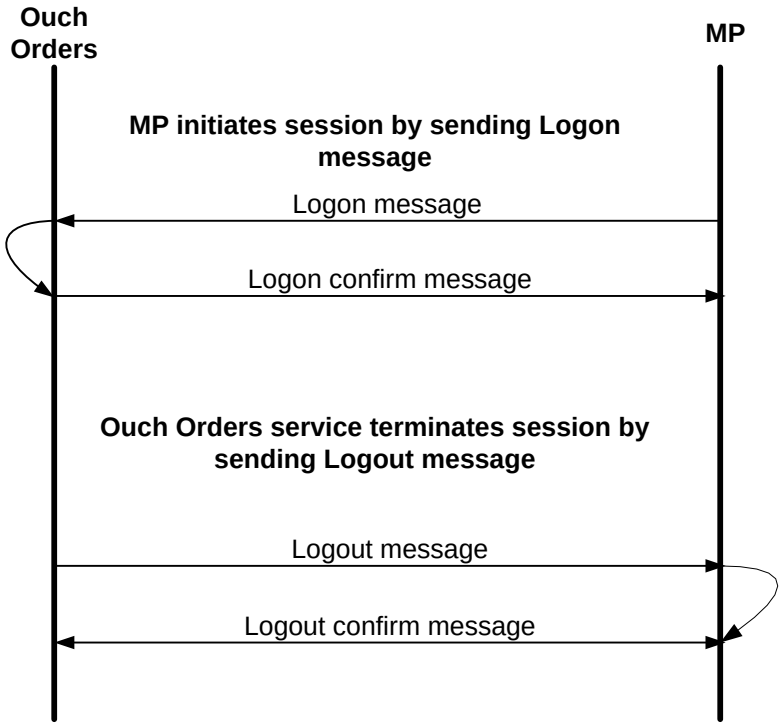


Figure 2: Initiate and Terminate Session

5.3 Heart Beat Messages

To ensure OUCH session integrity, Currenex sends a Heartbeat (HB) message every three (3) seconds. Upon receipt of a HB from Currenex , a user must immediately respond with its own HB message that must reach Currenex within three (3) seconds. If a HB response is not received within three (3) seconds, the HB will be marked as having been missed. If two (2) consecutive HBs are missed, the session will be treated as inactive and explicitly closed by Currenex. Any HB received after the three (3) second period or before Currenex sends its HB will be ignored.

An OUCH user should send HB messages only in response to a HB received from Currenex. HB messages received in any other context will be ignored by Currenex.

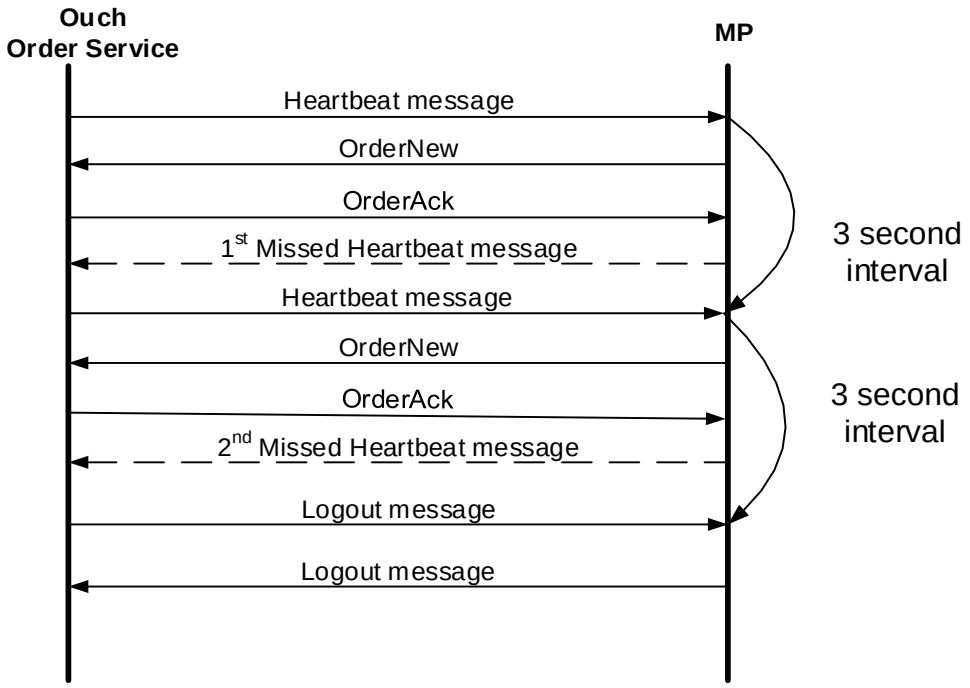


Figure 3: Missed Heartbeat Messages

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.

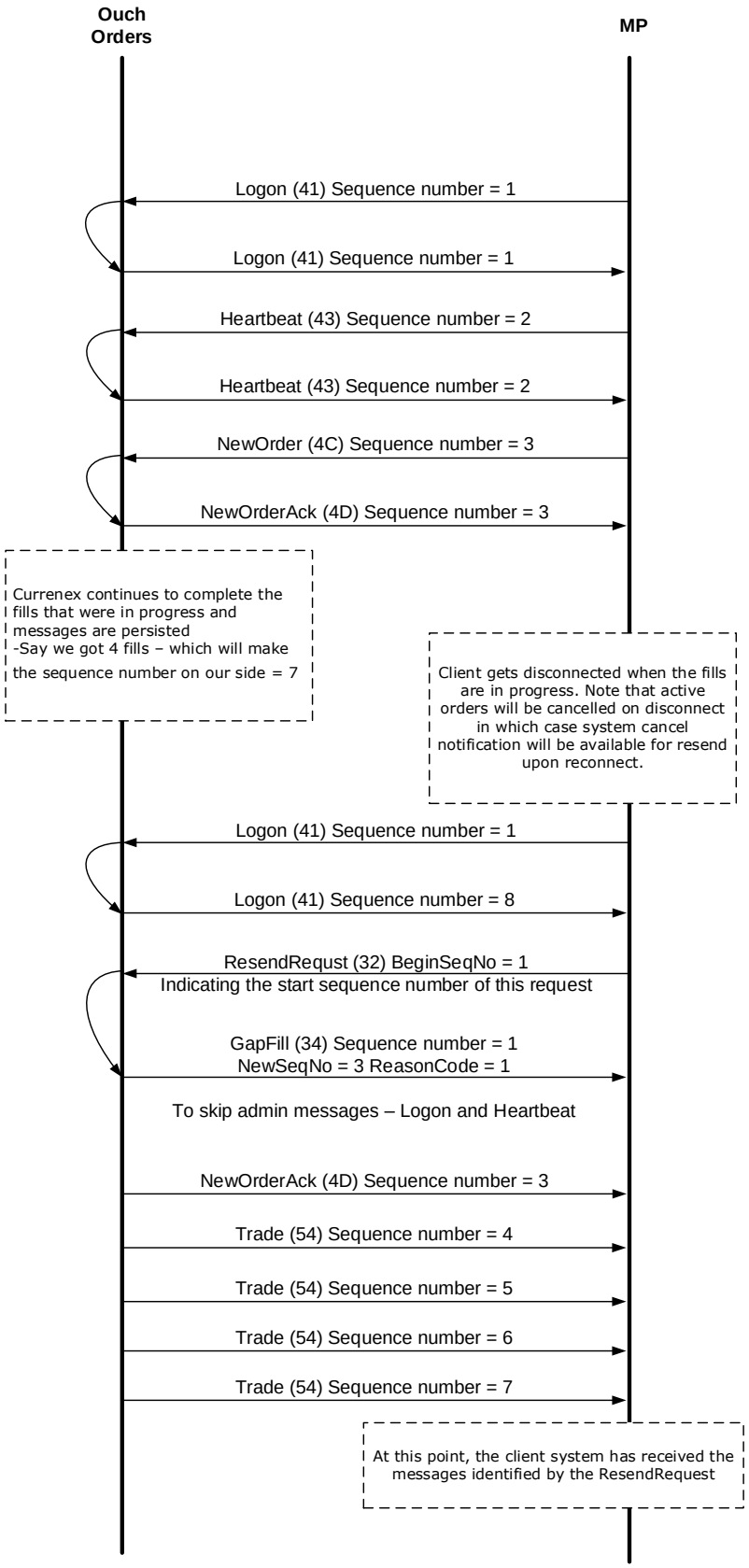
All available requested messages will be resent exactly as they were originally sent (or enqueued) with the original sequence number and send timestamp, with the exception of Logon, Logout, and Heartbeat. A GapFill message with ReasonCode = NOT_RESENDABLE will be sent in lieu of these administrative 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 For a detailed description of Ouch persistence-related information, please refer to the "Ouch Persistence Addendum" (which can be found on the integration-support site or from your Currenex representative).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. Each of these messages will detail the supported instruments and contain a pointer, "Instrument_Index," 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 Orders

7.1 Order Types

OUCH provides support for following order types:

- Limit
- Iceberg

7.2 Order Entry Minimum

Generally, the minimum permitted order entry size is 40k in the base currency of a pair, but this can vary depending on a client's liquidity providers. Please contact your Currenex account manager or Currenex Customer Support, support@currenex.com, to confirm the minimum order entry size setting.

7.3 Orders Message Flow

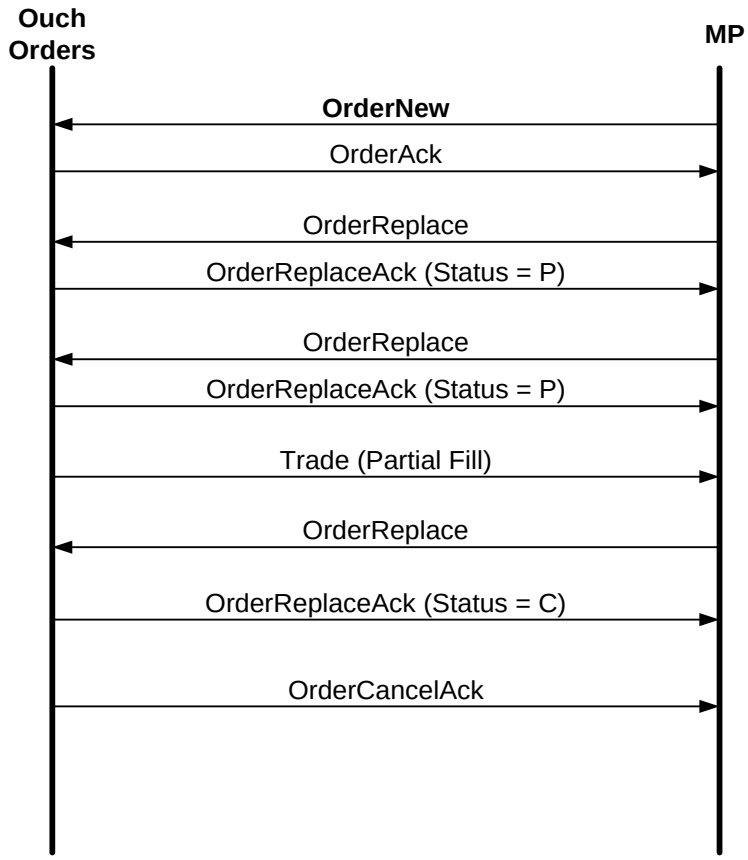


Figure 4: Basic Order Flow Example

7.4 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. Partially filled orders cannot be replaced. The outstanding amount on a partially filled order can be canceled.

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.

7.4.1 Cancel Replace Acknowledgement Status

If in response to an Order ReplaceOrCancel message an Order ReplaceOrCancel Ack message is received with Status = “C”, it indicates the order cannot be replaced as it has already been matched and is in process. The outstanding order can be filled in its entirety, canceled in its entirety, or partially filled with the remainder canceled, but a successful replace is not possible.

A separate message indicating the final status of the order after the processing is completed will always be sent.

7.5 Residual Amounts

If after a series of partial fills an order is left with an outstanding residual amount for less than one base (1) currency unit, 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.

7.6 Session Logouts and Disconnects

All Ouch ids are set to cancel outstanding orders upon a logout or unplanned session termination.

Note:	an order that has been matched on a price just prior to a session’s logoff or termination can still be filled. 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.

8 Ouch Pending Fill

8.1 Description

An Ouch id under an entity receiving firm liquidity, only, can be enabled to receive a Pending Fill (U x55) message at the time an order is matched. This message serves as notification of the expected fill, enabling the client to take action in advance of the final status of the order, which, barring a credit check failure, should be a fill.

8.2 Trade Pending Fill Followed by Trade Confirm

An enabled Ouch user id will receive a Pending Fill (U x55) message upon an order it has entered being matched. The Pending Fill (U x55) message will be linked to the subsequently sent Trade (t x74) message via the TradeLinkID.

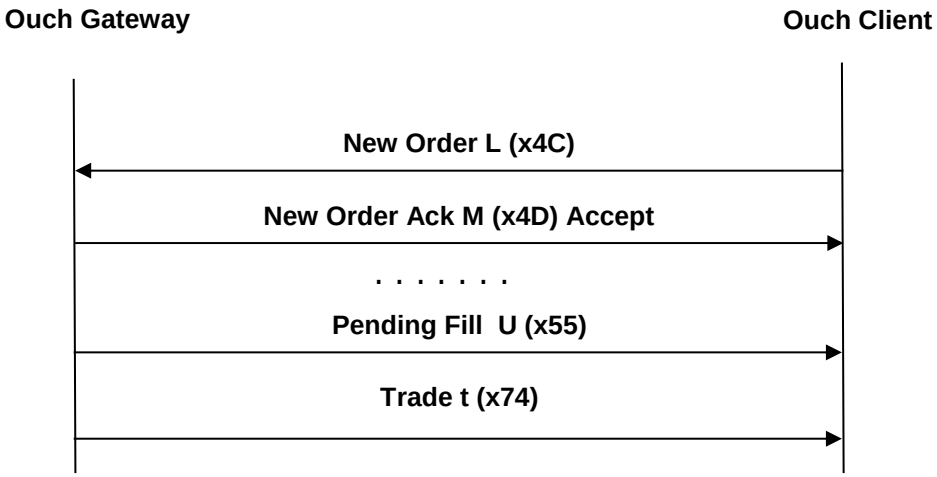


Figure 5: Pending Fill Followed by Trade Confirm

N.B.: TradeLinkID is unique within the scope of the order, only.

8.3 Trade Pending Fill followed by Pending Fill Cancel

If after a Pending Fill (U x55) message has been sent, an order is not filled for any reason, a Pending Fill Cancel (V x56) message will be sent. The Pending Fill (U x55) and Pending Fill Cancel (V x56) messages are linked via the TradeLinkID.

An order that receives a Pending Fill Cancel (V x56) can be placed back into the book for further matching, dependent upon its expiry conditions.

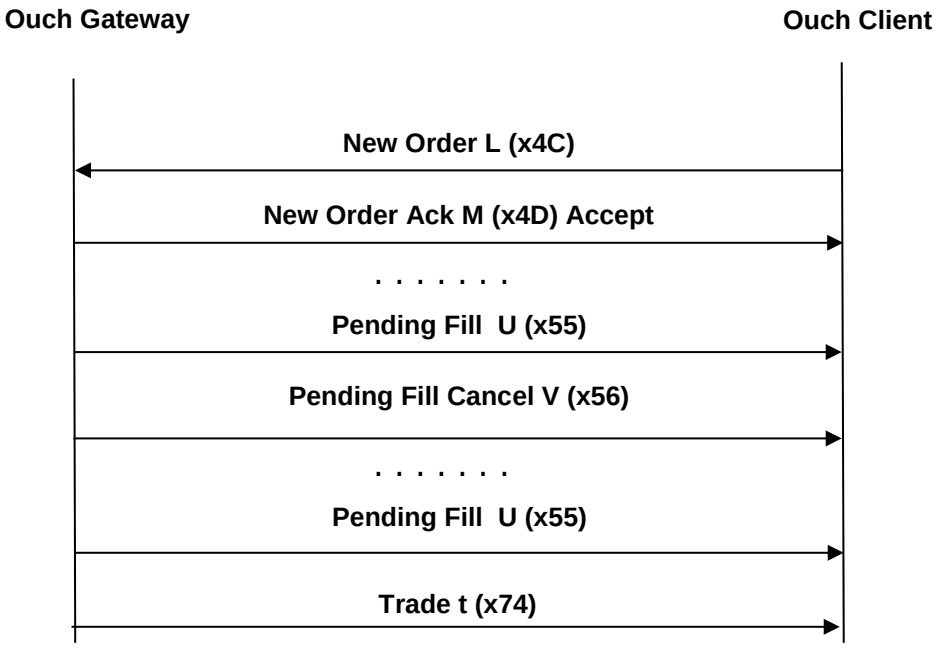


Figure 6: Pending Fill followed by Pending Fill Cancel

N.B.: TradeLinkID is unique within the scope of the order, only.

9 Message Header

Field Name	Offset	Length	Type	Description	Example
Sequence number	0	4	Integer	Directional session based sequence number.	00000001_{hex} (1_{dec})
Timestamp	4	4	Integer	Number of milliseconds past midnight.	$00b33_{hex}$ (50400051_{dec}ms = 14:00:00,051)
Message Type	8	1	Alpha		41_{hex} (A_{char})

10 Messages

10.1 Logon (41)

Message Type A (41_{hex}) – Logon					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
UserID	9	20	Alpha	User session login id	41626355736572202020202020202020202020202020$_{hex}$ ($AbcUser_{char}$)
Password	29	20	Alpha	User password	31323370737764202020202020202020202020202020$_{hex}$ ($123pswd_{char}$)
SessionID	49	4	Integer	Unique session ID provided by Currenex. NOTE: This field is only used by Currenex in response to Logon requests.	000006a1$_{hex}$ (1697_{dec})

10.2 Logout (42)

Message Type B (42_{hex}) - Logout					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
UserID	9	20	Alpha	User session login id	41626355736572202020202020202020 020202020$_{hex}$ ($AbcUser_{char}$)
SessionID	29	4	Integer	Unique session ID provided by QuickCx	000006a1$_{hex}$ (1697_{dec})
Reason	33	3	Alpha	For full list of Logout Message Error Codes, refer to Appendix A.	

10.3 Heartbeat (43)

Message Type C (43_{hex}) - Heart Beat					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	000006a1$_{hex}$ (1697_{dec})

10.4 InstrumentInfoRequest (45)

Message Type E (45_{hex}) - Instrument Info Request					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$000006a1_{hex}$ (1697_{dec})

10.5 InstrumentInfo (44)

Message Type D (44_{hex}) - Instrument Info					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$000006a1_{hex}$ (1697_{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.	$002d_{hex}$ (45_{dec})
InstrumentType	15	1	Alpha	Instrument Type: 1_{char} (31_{hex}) - Foreign Exchange 2_{char} (32_{hex}) - Cash Metals	31_{hex} (1_{char})
InstrumentID	16	20	Alpha	Free form instrument definition string.	4555522f5553442d5 350202020202020 20202020$_{hex}$ (EUR/USD-SP$_{char}$) 5553442f4a50592d3 1572020202020202020202020 (USD/JPY-1W$_{char}$)
SettlementDate	36	8	Long	Settlement date in milliseconds since Jan 1, 1970 GMT	00000139061b0e00$_{hex}$ (20120808-12:00:00,000)

10.6 NewOrder (4C)

Message Type L ($4C_{hex}$) - NewOrderRequest					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$ (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 the currency pair returned in the 'Instrument Info' message. Indicates the currency pair in which the order is to be placed.	$002d_{hex}$ (45_{dec})
Side	16	1	Alpha	Order side, values: B_{char} (42_{hex}) = Buy S_{char} (53_{hex}) = Sell	42_{hex} (B_{char})
OrderAmt	17	8	Long	Order amount in base currency scaled to two (2) places	$00000000003d0b27_{hex}$ ($40,005.51_{dec}$)
MinAmt	25	8	Long	Minimum quantity for which order can be executed.	$00000000003d0900_{hex}$ (40000.00_{dec})
Price	33	4	Rate	Rate at which the order should match and fill, scaled to five (5) places All in rate for forwards Swap points for Swaps	$0001e23a_{hex}$ (1.23450_{dec})
ShowAmt	37	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.	$000000007fffffff_{hex}$ ($21,474,836.47_{dec}$)
ExpireType	45	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})

10.7 NewOrderAck (4D)

Message Type M ($4D_{hex}$) – NewOrderAck					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$ (465889775_{dec})
OrderID	13	8	Long	Currenex OrderID. 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	0 indicates status set to 'confirm' Error Code from 1 to 99 indicates a reject Refer to Appendix A for a complete error code listing.	0000_{hex} (0_{dec})

10.8 OrderCancelRequest (4E)

Message Type N ($4E_{hex}$) – OrderCancelRequest					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
NewClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4ed5d_{hex}$ (465890653_{dec})
PrevClOrderID	13	4	Integer	Previous client order ID	$1bc4ed57_{hex}$ (465890647_{dec})
InstrumentIndex	17	2	Short	Numeric identifier for the currency pair returned in the 'Instrument Info' message. Indicates the currency pair for the outstanding order to be canceled.	$002d_{hex}$ (45_{dec})

10.9 OrderCancelReject (4F)

Message Type O ($4F_{hex}$)- OrderCancelReject					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
NewClOrderID	9	4	Integer	Unique new client order ID	$1bc4ed5d_{hex}$ (465890653_{dec})
PrevClOrderID	13	4	Integer	Previous client order ID	$1bc4ed57_{hex}$ (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})

10.10 OrderReplaceOrCancelRequest (50)

Message Type P (50_{hex}) – OrderReplaceOrCancelRequest					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
NewClOrderID	9	4	Integer	New ClientOrderID to be assigned to the replacement	$282c2db1_{hex}$ (673983921_{dec})
OrigClOrderID	13	4	Integer	ClientOrderID of the outstanding order to which replace will be applied.	$1d2c2db1_{hex}$ (489434545_{dec})
OrderAmt	17	8	Long	New order amount	$00000000003d0b27_{hex}$ ($40,005.51_{dec}$)
Price	25	4	Rate	New order price All in rate for forwards Swap points for swaps	$0001e23a_{hex}$ (1.23450_{dec})
InstrumentIndex	29	2	Short	Numeric identifier for the currency pair returned in the 'Instrument Info' message. Indicates the currency pair for the outstanding order to be replaced.	$002d_{hex}$ (45_{dec})

10.11 OrderReplaceOrCancelAck (51)

Message Type Q (51_{hex}) – OrderReplaceAck					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
NewClOrderD	9	4	Integer	New, unique, client order ID passed to replace request	$282c2db1_{hex}$ (673983921_{dec})
PrevClOrderID	13	4	Integer	Original client order ID passed to replace request.	$1d2c2db1_{hex}$ (489434545_{dec})
Status	17	1	Alpha	Cancel or Replace 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})

10.12 OrderCanceledOrExpired (52)

Message Type R (52_{hex}) – Unsolicited Cancel					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$ (465889775_{dec})
OrderID	13	8	Long	Currenex OrderID.	$000000026c8dfbb4_{hex}$ (10411178932_{dec})
Status	21	1	Alpha	Cancel order acknowledge type, values: E_{char} (45_{hex}) - expired C_{char} (43_{hex}) - canceled	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	0000_{hex} (0_{dec})

10.13 Trade (54)

Message Type T (54_{hex}) - Trade					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$ (465889775_{dec})
OrderID	13	8	Long	Currenex OrderID.	$000000026c8dfbb4_{hex}$ (10411178932_{dec})

Message Type T (54_{hex}) - Trade					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
InstrumentIndex	21	2	Short	Numeric identifier for the currency pair returned in the 'Instrument Info' message. Indicates the currency pair in which the trade was done.	$002d_{hex}$ (45_{dec})
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	4	Integer	Trade rate All in rate for forwards Swap points for swaps	$0001e483_{hex}$ (1.24035_{dec})
ExecBroker	36	4	Alpha	Execution broker's code, or NA	$4e412020_{hex}$ (NA_{char})
ExecutionID	40	20	Alphanumeric	Trade ID.	413230313232323030363344a 4230302020202020_{hex} ($A2012220064JB00_{char}$)
ExecType	60	1	Alpha	Execution Type, values: 1_{char} (31_{hex}) – new trade	31_{hex} (1_{char})
SettleDate	61	8	Long	Settlement date. Time is in ms from 1 Jan 1970 GMT.	$000001390b416a00_{hex}$ (20120809-12:00:00,000)
TradeDate	69	8	Long	Trade date, trades completed after trade roll over time will show next business date. Time is in ms from 1 Jan 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.	$0000000002FAF080_{hex}$ ($500,000.00_{dec}$)
AggressorFlag	93	1	Alpha	Aggressor flag: 1_{char} (31_{hex}) - client is aggressor 2_{char} (32_{hex}) – client is not aggressor	32_{hex} (2_{char})

10.14 PendingFill (55)

Message Type U (55_{hex}) – Pending Fill					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$

Message Type U (55_{hex}) – Pending Fill					
					(465889775_{dec})
OrderID	13	8	Long	Currenex OrderID.	$000000026c8dfbb4_{hex}$ (10411178932_{dec})
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: Unique per book. Use TradeLinkID and InstrumentIndex together for uniqueness.	15_{hex}(21_{dec})
FillAmt	25	8	Long	Trade amount	$00000000017d7840_{hex}$ ($250,000.00_{dec}$)
FillRate	33	4	Integer	Trade rate	$0001e483_{hex}$ (1.24035_{dec})
AggressorFlag	37	1	Alpha	1_{char} (31_{hex}) - taker is aggressor (aggressor) 2_{char} (32_{hex}) – taker is not the aggressor (aggressed) 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	38	4	Alpha	Execution broker's code, or NA	$4e412020_{hex}$ (NA_{char})

10.15 PendingFillCancel (56)

Message Type V (56_{hex}) – Pending Fill Cancel					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	$1bc4e9ef_{hex}$ (465889775_{dec})
OrderID	13	8	Long	Currenex OrderID.	$000000026c8dfbb4_{hex}$ (10411178932_{dec})
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: NOTE: Unique per book. Use TradeLinkID and InstrumentIndex together for uniqueness.	15_{hex}(21_{dec})
FillAmt	25	8	Long	Trade amount	$00000000017d7840_{hex}$ ($250,000.00_{dec}$)

Message Type V (56_{hex}) – Pending Fill Cancel					
FillRate	33	4	Integer	Trade rate	0001e483$_{hex}$ (1.24035$_{dec}$)
AggressorFlag	37	1	Alpha	1$_{char}$ (31$_{hex}$) - taker is aggressor (aggressor) 2$_{char}$ (32$_{hex}$) – taker is not the aggressor (aggressed) 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	38	4	Alpha	Execution broker's code, or NA	4e412020$_{hex}$ (NA$_{char}$)

10.16 Trade - linked to Pending Fill (74)

Message Type t (74_{hex}) – Trade (linked to Pending Fill)					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
ClOrderID	9	4	Integer	Unique ClientOrderID	1bc4e9ef$_{hex}$ (465889775$_{dec}$)
OrderID	13	8	Long	Currenex OrderID.	000000026c8dfbb4$_{hex}$ (10411178932$_{dec}$)
TradeLinkID	21	4	Integer	TradeLinkID that provides linkage between pending fill, fill cancel and trade messages NOTE: NOTE: Unique per book. Use TradeLinkID and InstrumentIndex together for uniqueness.	15$_{hex}$(21$_{dec}$)
InstrumentIndex	25	2	Short	Numeric identifier for the currency pair returned in the 'Instrument Info' message. Indicates the currency pair in which the trade was done.	002d$_{hex}$ (45$_{dec}$)
Side	27	1	Alpha	Order side, values: B$_{char}$ (42$_{hex}$) = Buy Schar (53$_{hex}$) = Sell	42$_{hex}$ (B$_{char}$)
FillAmt	28	8	Long	Trade amount	00000000017d7840$_{hex}$ (250,000.00$_{dec}$)
FillRate	36	4	Integer	Trade rate	0001e483$_{hex}$ (1.24035$_{dec}$)
ExecBroker	40	4	Alpha	Execution broker's code, or NA	4e412020$_{hex}$ (NA$_{char}$)
ExecutionID	44	20	Alphanumeric	Trade ID.	413230313232323030363344a4230302020202020$_{hex}$ (A2012220064JB00$_{char}$)

Message Type t (74_{hex}) – Trade (linked to Pending Fill)					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
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 ms from 1 Jan 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 ms from 1 Jan 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.	$0000000002FAF080_{hex}$ ($500{,}000.00_{dec}$)
AggressorFlag	97	1	Alpha	1_{char} (31_{hex}) - taker is aggressor (aggressor) 2_{char} (32_{hex}) – taker is not the aggressor (aggressed) 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})

10.17 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)

10.18 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)

11 Appendix

11.1 Error Codes

Error Code$_{hex}$	Description
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- cannot reuse active ClOrdID
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

Error Code$_{hex}$	Description
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

11.2 Logout Message Error Codes

Error Code	Description
A1	Replaced
A2	Timed Out
A3	Invalid Session Id
A4	Internal Session Error
A5	Internal Authentication Failure
A6	Internal User Logout
A7	Internal Failed Delivery
A8	Internal Session Closed
A9	Second Heartbeat Timed Out
A10	Invalid Sequence Number

11.3 Frequently Asked Questions (FAQ)

#	Question	Answer
1	Can a partially filled order be cancelled or replaced?	No, if a cancel replace is received for an order that has been partially filled, the outstanding part of the order will be cancelled, but the replace will be rejected.
2	Are decimal places supported in amount values?	Amounts are handled as scaled integers to two decimal places by multiplying 10^2. For example, the number 100000.50 is handled as 10000050.
3	Are instrument indexes static?	Instrument indexes are static only for the duration of the current session, but can and do change from session to session. They must be retrieved with the start of each new session.
4	Are orders automatically cancelled upon a session logout or disconnection?	All outstanding orders process. Orders not matched and in process with a bank will be canceled in the event of a disconnection. Orders process will not be canceled and still can fill. To ensure accounting for all filled orders, Currenex recommends the use of its FIX STP service, a separate guaranteed completed trade delivery service.
5	Internal Authentication Failure	Sequence numbers are only persisted from session to session if persistence is enabled for a user. Otherwise, each new session starts with a sequence number (1) and is incremented by one (1) with each new message. Sequence numbers are directional. Should the validation of a sequence number fail, the session should be closed.

11.4 Revision History

Revision Number	Revision Date	Page Number	Update
1	17 Oct 2013	12	Section 7.4.1: Changed wording describing cancel replace acknowledgement status.
2	5 Nov 2014	16-20	Support added for streaming forwards and swaps.
3	22 May 2015	22	Section 11.1: Added hex indicator to error codes.
4	04 June 2015	13-14; 23-26	Section 8 and Section 10.14-10.16: Merged with Ouch Pending Fill Ack specification.
5	3 November 2015	27	Section 11.1: added Error codes 0018 – 0022.
6	2 December 2015	12	Section 7.6 Added.
7	22 September 2016	21	Section 10.11: Changed name to Order ReplaceorCancel Ack.
8	9 November 2016	25	Section 10.13 and 10.16: Changed description of LeavesAmt and ExceType.
9	20 January 2017	27	Section 11.1: Removed '0014' added '0020.'
10	4 August 2017	*	Document put into new client-facing template.
11	6 October 2017	16	Updated examples for Username and Password in Logon and Logout messages
12	18 December 2017	12	Section 7.6 updated to make clear all ouch ids are set to cancel orders upon disconnection.
13	10 January 2018	9	Reduced Heart Beat interval to three (3) seconds.
14	15 March 2018	12	Time Outs: Removed promote trade scenario.
15	23 March 2018	9	Updated explanation of missed heartbeat scenario to make it more clear.
16	20 July 2018	27	Error code 14 was incorrectly listed as 20.
17	06 September 2018	12 22	Removed 7.7 Time Out scenario Removed Suspended/Demoted ExecType from Trade msg

18	26 October 2018	18	Updated ShowAmt explanation.
19	17 July 2019	10, 28	Adding Persistence support/documentation
20	04 June 2020	29	Added A10 to Logout message codes
21	19 October 2020	8,9 29	Edited section 5.1.1, 5.5 Updated Error code A10
22	18 November 2020	24,26 11	Updated TransactTime description to mention match Sequence number update on image to reset to 1.
23	11 January 2022	28	Added more supported values of Error Codes in Section 11.1 to provide specific errors instead of 99
24	22 September 2022	24	Removed mention of suspended trades in of LeavesAmt description
25	29 November 2022	28	Updated Error Code 000d description to remove reference to already filled order. ClOrdID must be unique.
26	4 June 2024	10	Added note to reference Ouch Persistence Addendum.