Currenex NOW Itch Specification

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

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Currenex Client Support

US Toll Free: + 1 877 939 8723
London: + 0 800 358 5331
Singapore: + 65 6826 7476
Tokyo: + 813 4530 7555

All Other Countries:

Primary: + 1 212-340-1790
Secondary: + 1 212-685-5950
support@currenex.com

Currenex Sales

New York: + 212 340 5220
London: + 44 203 395 7930
Tokyo: + 81 3 4530 7555
Hong Kong: +852 2230 1566
Singapore: + 65 6826 7476
Australia: + 612 8429 1204
sales@currenex.com

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1 Introduction

1.1 Purpose

This document describes the Itch messages used to deliver Currenex_NOW market data.

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2 Product Overview

The Currenex_NOW service provides real-time access to FOREX spot market data. It comprises four (4) distinct market data feeds:

- **NOW_Depth of Book**:
- **NOW_Weighted Average Mid-Rate (WAMR) with Confidence Factor**:
- **NOW_Paid/Given with Size Indicator**:
- **NOW_Mid Activity Indicator**:

A user can choose to subscribe to all or a subset of the above.

2.1 NOW_Depth of Book

Currenex NOW_Depth of Book is a real-time feed of foregin exchange (FOREX) spot bid and offer quotes with cumulative amounts and depth. The first x price levels and amounts within y pips of the top of the book (TOB) are delivered. Up to twenty (20) levels of price depth are supported. When no prices are available at a depth level, zero (0) will be displayed for both the price and amount and the level can be ignored.By default, x = 20 and y = +/- 5 for major market currency pairs and x = 5 and y = +/- 100 for emerging market pairs.

2.2 NOW_Weighted Average Mid-Rate (WAMR) with Confidence Factor

Delivers the calculated Weighted Average Mid-Rate (WAMR) with bid and offer quotes banded into confidence quartiles: 75, 50 and 25.

2.3 NOW_Paid/Given with Bucketed Size

A Paid/Given feed containing the price, aggressor status, banded amount and the transaction time of the most recent trade done against Currenex_NOW liquidity. Three (3) amount bands are supported:

- less (<) 500K
- between (<>) 500K – 2M
- greater than (>) 2M

2.4 NOW_Mid Activity Indicator

A feed that indicates if Currenex Mid deal has completed in the previous fifteen (15) or forty-five (45) seconds or previous to the most recent (45) seconds. i.e. a t20 event has occurred.

The indicator is published every thirty (30) seconds relative to the start of the minute.

2.5 Currenex_NOW via Itch

Currenex_NOW supports both the Financial Information eXchange (FIX) and Itch protocols.
The Itch protocol has the following advantages over FIX:

- Messages of set sizes require less processing and in turn lead to lower latency times.
- Set field sizes enable faster message parsing and easier memory management. Integer values are used wherever possible.
- Choice of UDP message delivery eliminates latency associated with TCP overhead.
- Customers located where the Currenex datacenter is located can achieve microsecond (µs) scale performance.

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3 Protocol

Itch supports the following network protocols:

- UDP

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4 Message Data

A message data block consists of one or multiple messages and can be of no more than 1,000 bytes in length.

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

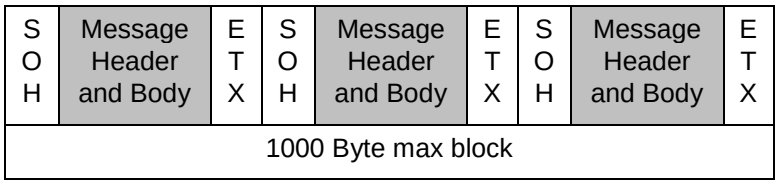

Figure 1: Sample Message Block Layout

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 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.

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 base currency would be represented as 0x5F5E100.

4.2.3 Scale5_Rate

Scale5_Rate fields are delivered as hexadecimal numbers scaled to five (5) places. The equivalent decimal value must be multiplied by 10^{-5} or divided by 100,000 to arrive at the correct placement of the decimal point.

4.2.4 Scale6_Rate

Scale6_Rate fields are delivered as hexadecimal numbers scaled to six (6) places. The equivalent decimal value must be multiplied by 10^{-6} or divided by 1,000,000 to arrive at the correct placement of the decimal point.

E.g., a Curernex_NOW Depth rate of 94.90870 is represented as 9490870 in decimal format or $0x90D1B6_{hex}$. Similarly, a WAMR value of 1.123456 would be represented as 1123456 in decimal format and as $0x112480_{hex}$.

The maximum rate value allowed is $0x7FFFFFFF_{hex}$ or 2147483647 in decimal, which supports Curenex_NOW rates up to 21474.83647 and Currenex Now WAMR up to 2147.483647

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.

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4.2.5 Date/Time

Dates and times are handled as longs and counted in milliseconds since 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. NOW_Weighted Average Mid-Rate with Confidence Factor calculation timestamp is Epoch GMT time in mircroseconds.
3. NOW_Paid/Given message 'TransactTime' is the trade transaction in Epoch GMT time in milliseconds.

4.2.6 Padding

Most fields are left justified with a space (20_{hex}) used as padding on the right to fill the field to its defined length; e.g.,

Field Name	Length	Description	Hexadecimal	Character
Password	20	User password	313233707377642020202020202020	123pswd

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5 Message Handling

5.1 Rejects

Currenex responds with a Reject ($4B_{hex}$) message to incorrectly formatted messages; messages with invalid headers are ignored.

5.2 Sequence Numbers

The initial sequence number count for a new session must start at one (1) and be incremented by one (1) on each message sent to Currenex. Likewise, Currenex sets its initial message count to one (1).

A separate sequence count is maintained per currency pair on Currenex_NOW Depth of Book, WAMR, Paid/Given or Mid Activity messages. This enables the identifying of gaps in the count due to dropped packets down to the currency pair level.

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6 Session

6.1 Open Session

A Currenex_NOW client initiates a session by submitting a Logon message to Currenex. The session is established when the MP receives a Logon message in response from Currenex.

6.2 Terminate Session

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

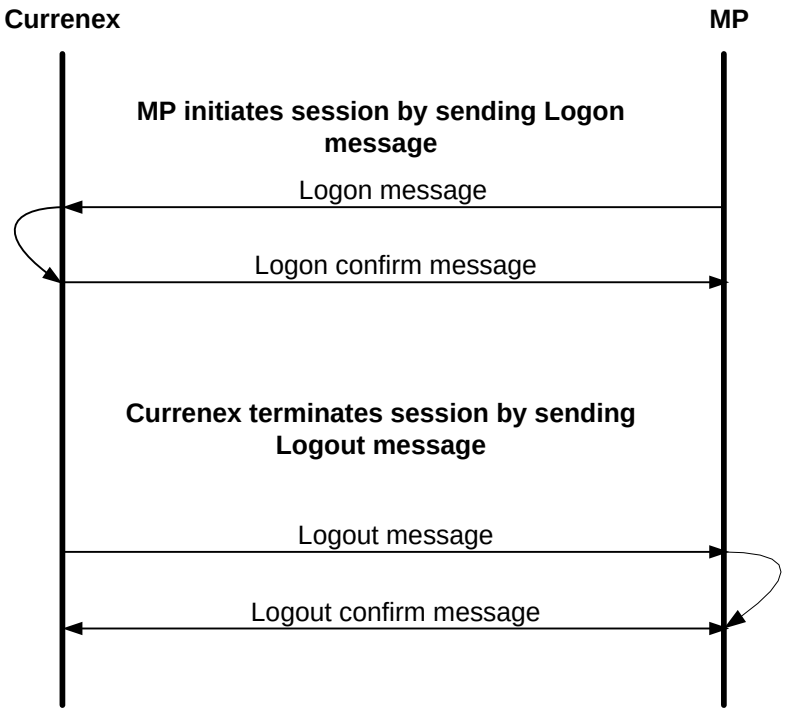

Figure 2: Session Initiation and Termination

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7 Heart Beat Messages

To ensure ITCH session integrity, Currenex sends a Heart Beat (HB) messages every fifteen (15) seconds. Upon receipt, a user must respond with its own HB message. Currenex will wait fifteen (15) seconds for the HB response. If none is received, Currenex will send another HB, again waiting fifteen (15) seconds. If still no HB response is received, the session will be treated as inactive and explicitly closed by Currenex.

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

A Currenex_NOW Itch client should send HB messages only in response to a HB received from Currenex. HB messages received in any other context are ignored by Currenex.

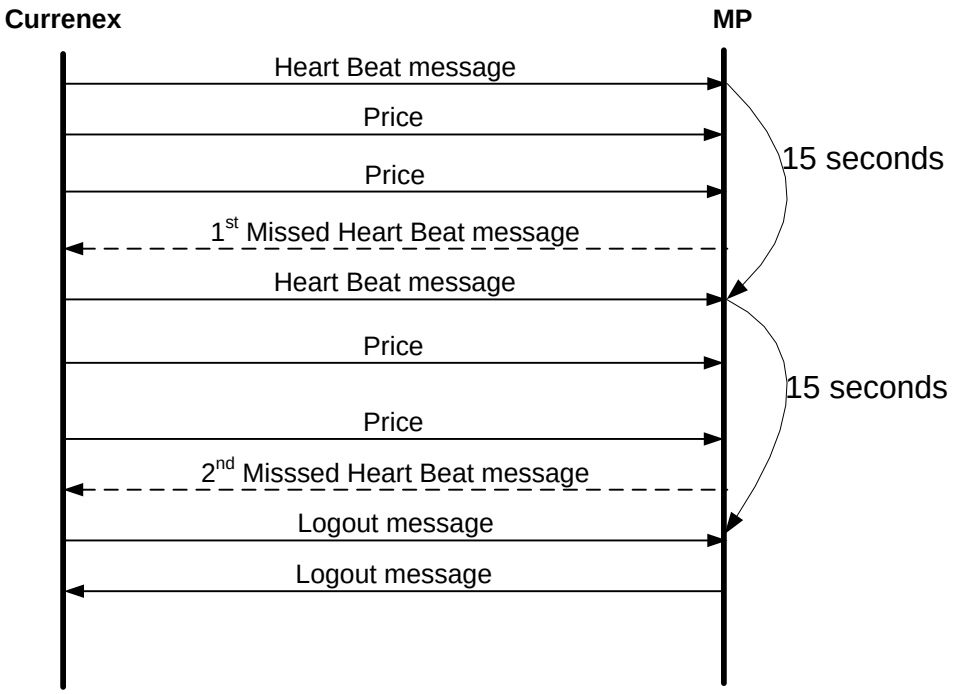

Figure 3: Missed Heart Beat Messages

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8 Instrument Information Message

Upon successful logon, Currenex will send "Instrument Info" messages automatically, i.e. clients do not need to send an "Instrument Info Request" message.

A client should respond to each received "Instrument Info" message with an "Instrument Info Ack" message. If no acknowledgment is received within a set time period, Currenex will resend an "Instrument Info" message, but only once.

Included in the "Instrument Info" message is "Instrument Type," a free form instrument definition and the "Instrument Index" used to request prices, settlement date, etc.

In response to specific data changes, Currenex will resend the "Instrument Info" message; e.g., due to a settlement date roll over.

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.

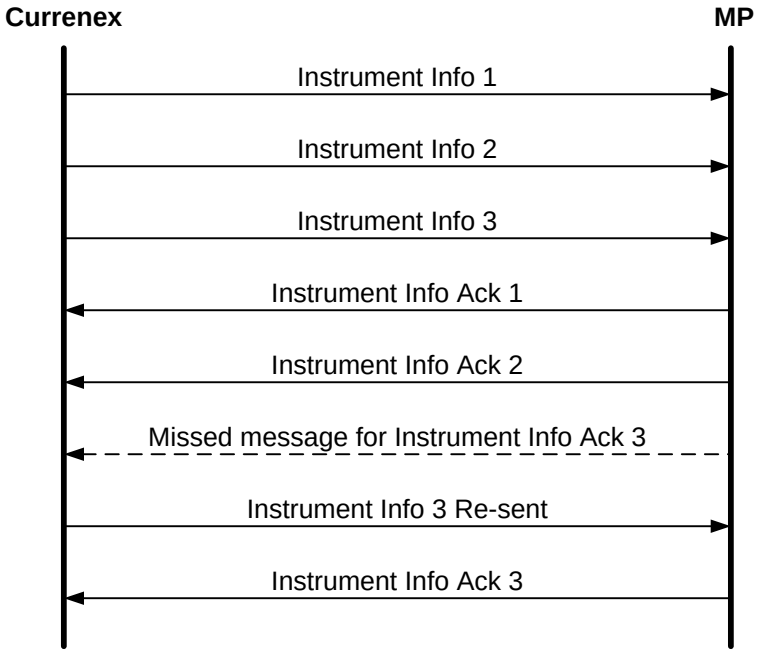

Figure 4: Instrument Info Messages

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9 Subscription Request

9.1 Requesting Market Data

Currenex will stream Currenex_NOW messages to a client once it receives a "Subscription Request" message. Currenex responds to a "Subscription Request" with a "Subscription Reply" message.

A user can subscribe to all supported currency pairs at once via the Mass Subscription Request message or to individual pairs via the "Subscription Request" message.

A client can cancel an instrument subscription by sending a "Subscription Request" message with the SubscriptionType field set to unsubscribe.

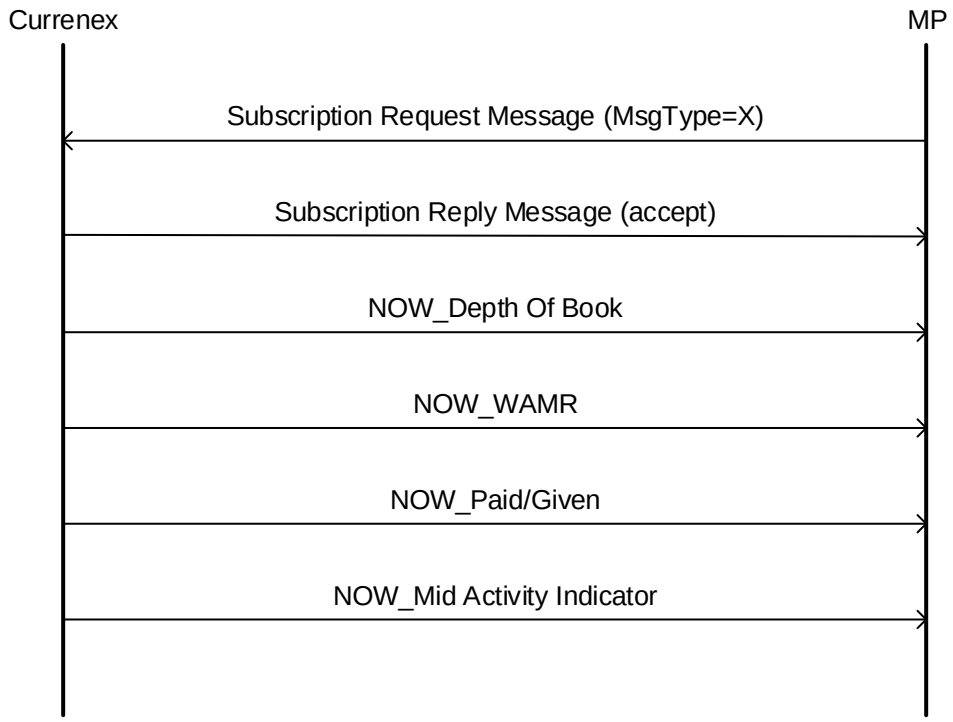

Figure 5: Requesting Market Data

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10 Message Header

Field Name	Offset	Length	Type	Description	Example
Sequence Number	0	4	Integer	Directional session based sequence number. Overloaded in that a separate count is maintained per instrument.	00000001_{hex} (1_{dec})
Timestamp	4	4	Integer	Number of milliseconds past midnight.	$03010b37_{hex}$ (50400055_{dec}ms = 14:00:00,055)
Message Type	8	1	Alpha	Message type	41_{hex} (A_{char})

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11 Messages

11.1 Logon

Message Type A (41_{hex}) – Logon					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
UserID	9	20	Alpha	User session login id	$41626355736572202020202020202020_{hex}$ ($AbcUser_{char}$)
Password	29	20	Alpha	User password	$31323370737764202020202020202020_{hex}$ ($123pswd_{char}$)
SessionID	49	4	Integer	Unique session ID provided by Currenex. NOTE: This field is only used by Currenex in response to Logon requests.	$4300015f_{hex}$ (1124073823_{dec})

11.2 Logout

Message Type B (42_{hex}) - Logout					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
UserID	9	20	Alpha	User session login id	$4162635573657220202020 20202020_{hex}$ ($AbcUser_{char}$)
SessionID	29	4	Integer	Unique session ID provided by Currenex	$4300015f_{hex}$ (1124073823_{dec})
Reason	33	3	Alpha	Optional text. See Appendix, Logout Message Reason Codes, for more information.	004131_{hex} ($A1_{char}$)

11.3 Heart Beat

Message Type C (43_{hex}) - Heart Beat					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{dec})

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11.4 Instrument Info

Message Type D (44_{hex}) - Instrument Info					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{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.	0055_{hex} (85_{dec})
InstrumentType	15	1	Alpha	Instrument Type: 31_{hex} (1_{char}) - Foreign Exchange 32_{hex} (2_{char}) - Cash Metals	31_{hex} (1_{char})
InstrumentID	16	20	Alpha	Free form instrument definition string.	4555522f5553442d535020202020202020202020$_{hex}$ (EUR/USD-SP$_{char}$) 5553442f4a50592d3 15720202020202020202020 (USD/JPY-1W$_{char}$)
SettlementDate	36	8	Long	Settlement date in GMT Epoch time milliseconds	$000001390b416a00_{hex}$ (20120809-12:00:00,000_{dec})

11.5 Instrument Info Ack

Message Type E (45_{hex}) - Instrument Info Ack					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{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.	0055_{hex} (85_{dec})

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11.6 Subscription Request

Message Type X (58_{hex}) - Subscription Request					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{dec})
SubscriptionType	13	1	Alpha	Subscription Type: 30_{hex} (0_{char}) - Subscribe 31_{hex} (1_{char}) – Unsubscribe 32_{hex} (2_{char})- Resubscribe	30_{hex} (0_{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.	0055_{hex} (85_{dec})
SubscribeToNOW_ DepthOfBook	16	1	Alpha	Subscribe to price updates with full depth of the book. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	30_{hex} (0_{char})
SubscribeToNOW_ Paid/Given with Bucketed Size	17	1	Alpha	Subscribe to NOW_Paid/Given with bucketed size. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	31_{hex} (1_{char})
SubscribeToNOW_ WAMR with Confidence Factor	18	1	Alpha	Subscribe to WAMR updates with confidence factor. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	30_{hex} (0_{char})
SubscribeToNOW_ Mid activity indicator	19	1	Alpha	Subscribe to Mid Activity Indicator updates. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe	30_{hex} (0_{char})

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Message Type X (58_{hex}) - Subscription Request					
				31_{hex} (1_{char})- Do not subscribe	

11.7 Mass Subscription Request

Message Type Y (59_{hex}) – Mass Subscription Request					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{dec})
SubscriptionType	13	1	Alpha	Subscription Type: 30_{hex} (0_{char}) – Subscribe All 31_{hex} (1_{char}) – Unsubscribe All	30_{hex} (0_{char})
SubscribeToNOW_ DepthOfBook	14	1	Alpha	Subscribe to price updates with full depth of the book. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	30_{hex} (0_{char})
SubscribeToNOW_ Paid/Given with Bucketed Size	15	1	Alpha	Subscribe to NOW_Paid/Given with bucketed size. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	31_{hex} (1_{char})
SubscribeToNOW_ WAMR with Confidence Factor	16	1	Alpha	Subscribe to WAMR updates with confidence factor. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	30_{hex} (0_{char})
SubscribeToNOW_ Mid Activity Indicator	17	1	Alpha	Subscribe to Mid Activity Indicator updates. Only relevant for SubscriptionType=0. Type: 30_{hex} (0_{char})- Subscribe 31_{hex} (1_{char})- Do not subscribe	30_{hex} (0_{char})

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11.8 Subscription Reply

Message Type G (47_{hex}) - Subscription Reply					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{dec})
InstrumentIndex	13	2	Short	Instrument Index	0055_{hex} (85_{dec})
Type	15	1	Alpha	Instrument Type: 31_{hex} (1_{char}) - Accepted 32_{hex} (2_{char}) - Rejected	31_{hex} (1_{char})
Reason	16	50	Alpha	Free form reject reason text, specified if AckType is set to 2 - Rejected	

11.9 Mass Subscription Reply

Message Type Z ($5a_{hex}$) - MassSubscription Reply					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	4300015fhex (1124073823dec)
Type	13	1	Alpha	Instrument Type: 31hex (1char) - Accepted 32hex (2char) - Rejected	31hex (1char)
Reason	14	50	Alpha	Free form reject reason text, specified if AckType is set to 2 - Rejected	

11.10 NOW_DepthOfBook

Note: Where the Bid/Offer Rate and Amount are both 0, it means no or not enough liquidity is available to calculate a meaningful depth and the level can be ignored.

Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
InstrumentIndex	9	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.	0055_{hex} (85_{dec})
PriceID	11	4	Integer	Id, unique across all currency pairs	00003218_{hex} (12824_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
				for the scope of the session, assigned to the price	
Level1_BidRate	15	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level1_BidAmount	19	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level1_OfferRate	27	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level1_OfferAmount	31	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level2_BidRate	39	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level2_BidAmount	43	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level2_OfferRate	51	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level2_OfferAmount	55	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level3_BidRate	63	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level3_BidAmount	67	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level3_OfferRate	75	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level 3_OfferAmount	79	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level4_BidRate	87	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level4_BidAmount	91	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level4_OfferRate	99	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Level4_OfferAmount	103	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level5_BidRate	111	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level5_BidAmount	115	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level5_OfferRate	123	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level5_OfferAmount	127	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level6_BidRate	135	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level6_BidAmount	139	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level6_OfferRate	147	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level6_OfferAmount	151	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level7_BidRate	159	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level7_BidAmount	163	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level7_OfferRate	171	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level7_OfferAmount	175	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level8_BidRate	183	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level8_BidAmount	187	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level8_OfferRate	195	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Level8_OfferAmount	199	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level9_BidRate	207	4	Scale5_Rate	Bid Rate	$0001e666_{hex}$ (1.24518_{dec})
Level9_BidAmount	211	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level9_OfferRate	219	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level9_OfferAmount	223	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level10_BidRate	231	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level10_BidAmount	235	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level10_OfferRate	243	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level10_OfferAmount	247	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level11_BidRate	255	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level11_BidAmount	259	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level11_OfferRate	267	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level11_OfferAmount	271	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level12_BidRate	279	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level12_BidAmount	283	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level12_OfferRate	291	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Level2_OfferAmount	295	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level13_BidRate	303	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level13_BidAmount	307	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level13_OfferRate	315	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level13_OfferAmount	319	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level14_BidRate	327	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level14_BidAmount	331	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level14_OfferRate	339	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level14_OfferAmount	343	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level15_BidRate	351	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level15_BidAmount	355	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level15_OfferRate	363	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level15_OfferAmount	367	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level16_BidRate	375	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level16_BidAmount	379	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level16_OfferRate	387	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Level16_OfferAmount	391	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level17_BidRate	399	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level17_BidAmount	403	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level17_OfferRate	411	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level17_OfferAmount	415	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level18_BidRate	423	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level18_BidAmount	427	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level18_OfferRate	435	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level18_OfferAmount	439	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level19_BidRate	447	4	Scale5_Rate	Bid Rate	$0001e666_{hex}$ (1.24518_{dec})
Level19_BidAmount	451	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level19_OfferRate	459	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})
Level19_OfferAmount	463	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level20_BidRate	471	4	Scale5_Rate	Bid rate	$0001e666_{hex}$ (1.24518_{dec})
Level20_BidAmount	475	8	Amount	Aggregated amount at this bid level	$0000000005f5e100_{hex}$ (1000000.00_{dec})
Level20_OfferRate	483	4	Scale5_Rate	Offer rate	$0001e666_{hex}$ (1.24518_{dec})

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Message Type d (64_{hex}) – NOW_DepthOfBook					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Level20_OfferAmount	487	8	Amount	Aggregated amount at this offer level	$0000000005f5e100_{hex}$ (1000000.00_{dec})

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11.11 NOW_Paid/Given with Bucketed Size

Message Type k ($6B_{hex}$) – NOW_Paid/Given					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
InstrumentIndex	9	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.	0055_{hex} (85_{dec})
Rate	11	4	Scale5_Rate	Trade execution rate	$0001e666_{hex}$ (1.24518_{dec})
SizeIndicator	15	1	Alpha	Indicator flag: 31_{hex} (1_{char}) - <500k 32_{hex} (2_{char}) - 500k – 2M 33_{hex} (3_{char}) - >2M	31_{hex} (1_{char})
Paid/Given Indicator	16	1	Alpha	Aggressor flag: 31_{hex} (49_{dec}) - given 32_{hex} (50_{dec}) - paid	31_{hex} (49_{dec})
TransactTime	17	8	Long	Trade transaction date time in Epoch GMT milliseconds.	$00000139061b0e00_{hex}$ (20120808-12:00:00,000 $_{char}$)

11.12 NOW_WAMR with Confidence Factor

Message Type r (72_{hex}) – NOW_WAMR					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
InstrumentIndex	9	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.	0055_{hex} (85_{dec})

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Message Type r (72_{hex}) – NOW_WAMR					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
Price	11	4	Scale6_Rate	WAMR scaled to six (6) places	$0012FFFD_{hex}$ (1.245181_{dec})
75_ConfFactor Bid	15	4	Scale5_Rate	75th percentile price scaled to five (5)	$0012FFFD_{hex}$ (1.245181_{dec}
75_ConfFactor Offer	19	4	Scale5_Rate	75th percentile price scaled to five (5) places	$0012FFFD_{hex}$ (1.245181_{dec}
50_ConfFactor Bid	23	4	Scale5_Rate	50th percentile price scaled to five (5) places	$0012FFFD_{hex}$ (1.245181_{dec}
50_ConfFactor Offer	27	4	Scale5_Rate	50th percentile price scaled to five (5) places	$0012FFFD_{hex}$ (1.245181_{dec}
25_ConfFactor Bid	31	4	Scale5_Rate	25th percentile price scaled to five (5) places	$0012FFFD_{hex}$ (1.245181_{dec}
25_ConfFactor Offer	35	4	Scale5_Rate	25th percentile price scaled to five (5) places	$0012FFFD_{hex}$ (1.245181_{dec})
Timestamp	39	8	Long	WAMR calculation timestamp in Epoch GMT microseconds.	$00053fc9fa5bc156_{hex}$ ($19:53:24,846934_{char}$)

11.13 NOW_Mid Activity Indicator

Message Type x (78_{hex}) – NOW_Mid Activity Indicator					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
InstrumentIndex	9	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.	0055_{hex} (85_{dec})
Activity Indicator	11	1	Alpha	Indicates if a Mid T_{20} trade has occurred within	41_{hex} (A_{char})

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Message Type x (78_{hex}) – NOW_Mid Activity Indicator					
				41_{hex} (A_{char}) = < 15 seconds 42_{hex} (B_{char}) = < 45 seconds 43_{hex} (C_{char}) = > 45 seconds	

11.14 Reject

Message Type K ($4B_{hex}$) - Reject					
Field Name	**Offset**	**Length**	**Type**	**Description**	**Example**
SessionID	9	4	Integer	Unique session ID provided by Currenex.	$4300015f_{hex}$ (1124073823_{dec})
RejectMsgType	13	1	Alpha	Rejected message type	46_{hex} (F_{char})
Reason	14	50	Alpha	Reason for rejecting message	496e76616c6964206d65737361676520666f726d6174 20202020202020202020202020202020202020202020 202020202020_{hex} (Invalid message format$_{char}$)

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Appendices

Appendix A 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

Appendix B Message Examples

Logon

```
Inbound Itch message:
01000000010004692A41693263786e6f775f7465737469642020202020207465737431323334202020
20202020202020202020202003

Parsed message:
SeqNo:1
Timestamp:00:04:49,066
MessageType:Logon
UserID:i2cxnow_testid
Password:test1234
```

Subscription Request

```
Inbound Itch message:
0100000005000469315800000181300001303030300 3

Parsed message:
SeqNo:5
Timestamp:00:04:49,073
MessageType:CXNowSubscriptionRequest
SessionID:385
SubscriptionType:Subscribe
Instrument:AUD/CHF-SP
DepthOfBook:Yes
Ticker:Yes
WAMR:Yes
Mid:Yes
```


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NOW_DepthOfBook (with only enough liquidity for five (5) Bids and six (6) Asks)

```
Outbound Itch message:
010000003E038D8F0264001F0000003E000655FE0000000005F5E1000006565D0000000005F5E100000
655EA0000000005F5E1000006566C0000000005F5E100000655E00000000005F5E10000065676000000
000BEBC200000655D60000000005F5E10000065680000000000BEBC200000655D40000000005F5E1000
00656890000000005F5E1000000000000000000000000000006568E0000000011E1A300000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000003

Parsed message:
SeqNo:62
Timestamp:16:33:28,834
MessageType:NOW_DepthOfBook

Instrument:EUR/PLN-SP
PriceID:62
BidRt0:4.15230
BidAmt0:1000000.00
AskRt0:4.15325
AskAmt0:1000000.00
BidRt1:4.15210
BidAmt1:1000000.00
AskRt1:4.15340
AskAmt1:1000000.00
BidRt2:4.15200
BidAmt2:1000000.00
AskRt2:4.15350
AskAmt2:2000000.00
BidRt3:4.15190
BidAmt3:1000000.00
AskRt3:4.15360
AskAmt3:2000000.00
BidRt4:4.15188
BidAmt4:1000000.00
AskRt4:4.15369
AskAmt4:1000000.00
AskRt5:4.15374
AskAmt5:3000000.00
```

Revision History

Revision Number	Revision Date	Page Number	Update
1	30 January 2016	19	Section 11.9: 'PriceID' type corrected to be 'Integer.'
2	Ditto	24	Section 11.11: 'ConfFactor' types corrected to show scaling to five (5) places, not six (6)
3	09 February 2017	19-23	Section 11.10: PriceLevel fields removed, field offsets adjusted.

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Revision Number	Revision Date	Page Number	Update
4	Ditto	24	Section 11.11: 75_ConfFactor, 75_Side, 50_ConfFactor, 50_Side, 25_ConfFactor and 25_Side fields removed, field offsets adjusted.
5	15 February 2017	19-23	Section 11.9: Now_DepthofBook field offsets corrected
6	Ditto	24	Section 11.11: NOW_WAMR field offsets corrected
7	15 March 2017	9,14	Section 5.2: Sequence Numbers description updated to indicate enhancement so that count is incremented per instrument Section 10: "Sequence Number" field description updated
8	15 June 2017	18	Section 11.7: Mass Subscription Request message added Section 11.9: Mass Subscription Reply message added
9	05 January 2018	4,18,25	Section 2.1, Section 11.10: Clarified that a zero bid/ask is displayed when no price available at given depth level for NOW_DepthofBook. Appendices: Updated Appendices format and added new message example section.
10	07 May 2018	4 21,22,23 16,17 29	Section 2.1: Updated Depth of Book supported from 10 to 20 Section 11.10: Updated NOW_DepthofBook table to reflect levels from 11 to 20 Section 11.6 and 11.7: Updated to reflect the correct field names of the below components: NOW_Paid/Given with bucketed size NOW_WAMR with Confidence Factor NOW_Mid activity indicator Appendix B: DepthofBook example

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