OneChronos Market Data Feed

Overview **2**
Definitions **3**
Connectivity **5**
Market Hours **5**
Message Publication Timeline **6**
Auction Update Feed: 6
Last Trade Feed: 6
Identifiers **7**
Sequencing & Recovery **7**
Data Types & Encoding **7**
Message Catalogue **8**
TemplateId Reference Table 8
Message Definitions **8**
Appendix A – Schema Definitions (Full) **9**
Enums 9
SecurityStatus 9
HaltReason 9
SuspensionReason 9
Optional Values 9
Message Header 10
Last Trade Messages (schemaId=19) 10
Heartbeat (templateId=1) 10
LastTrade (templateId=2) 10
Auction Update Messages (schemaId=19) 11
Heartbeat (templateId=1) 11
AuctionStart (templateId=3) 11
AuctionUncrossing (templateId=4) 11
AuctionIndicative (templateId=5) 11
AuctionSummary (templateId=6) 12
SecurityStateChange (templateId=7) 13

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Version Control

Version	Description	Publication date
v1.0	Initial version	22.09.2025
v1.1	Terminology clarification: replaced references to “average price” with “intended price” to better reflect auction execution logic. No changes to message schema, field names, offsets, encoding, or feed behaviour.	12.01.2026

v1.2	• Currency format updated to ISO 4217 standard throughout message types
	• Timestamp format updated to ISO 8601 UTC format, with microsecond granularity
	• New fields added to LastTrade messages:
	  ○ Trading System
	  ○ Price Notation
	  ○ Flags
	  ○ TIC
	• New fields added to AuctionIndicative messages:
	  ○ Trading System
	  ○ Trading System Phase
	  ○ Price Notation
		05.02.2026

v1.3	Updated Disclaimer	27.04.2026
v1.4	• Add “publicationDateAndTime” field to Auction Indicative and Last Trade messages • Reorder fields “isin” and “priceScale” in Last Trade and AuctionSummary • Rename “auctionCallTime” to “executionDateTime” in Last Trade and Auction Summary messages	04.06.2026
v1.5	• Removed priceScale, and use decimal price • Price type change from i64 to char(18) • Introduce “Venue of Publication” term • Reviewed width and offsets	26.06.2026

Overview

This document outlines the multicast market data interface for OCXL (OneChronos UK MTF) and OCXE (OneChronos EU MTF), collectively referred to as the “OneChronos MTF.” It describes the structure, content, and operational characteristics of the multicast data feeds, which disseminate trades, auction events, and security state changes in real time.

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OneChronos publishes two multicast feeds, detailed in this document:

1. **Auction Update Feed** - Publishing real-time messages communicating auction state and timing, pre-trade transparency and summary of the auction outcome.
2. **Last Trade Feed** - Providing post-trade transparency on the executions on OneChronos MTF.

The market data feed message schema uses the SBE encoding protocol. All details of the encoding protocol relevant to the Market Data Specification are included in this document, but an XML schema can be provided upon request. Please reach out to ops_europe@onechronos.com for a copy.

Definitions

Term	Definition
Auction	A periodic process in which buy and sell orders are matched to determine the clearing price of a security.
Execution Date Time	The timestamp that marks the end of the order collection period and the start of the optimisation/uncrossing process in an auction cycle. The date and time the transaction was executed.
Auction ID	A unique identifier for a specific auction.
Block Length	The length (in bytes) of a message, excluding the header
Closing Auction	An auction held at the end of the trading day by the Listing Exchange to determine the closing price of a security.
Currency	The standardization of money in which a security is traded on the primary listing venue. The following currencies are supported with these ISO 4217 short codes: ● CHF ● EUR ● GBP ● GBX ● NOK ● DKK ● SEK ● USD
Endianness	The order in which bytes are stored in memory for multi-byte values (e.g., little-endian, big-endian).
Enum	Short for "enumeration," a data type consisting of a set of named values (e.g., Currency, SecurityStatus).

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Term	Definition
Executing Exchange	The MTF trading venue (OCXL or OCXE) where the trade is executed, via the auction that is organised.
Gap Detection	The process of identifying missing messages in a sequence, typically by monitoring sequence numbers.
Heartbeat	A periodic message (sent once per second) that advances the feed Sequence Number and indicates the connection is alive. Used by clients to monitor feed liveness and detect message gaps.
ISIN	International Securities Identification Number: a 12-character alphanumeric code that uniquely identifies a security.
Listing Exchange	The primary exchange where a security is listed, identified by its MIC.
MIC	Market Identifier Code: a unique four-character code used to identify exchanges and trading venues.
MiFID II	Markets in Financial Instruments Directive II: a legislative framework instituted by the European Union to regulate financial markets and improve transparency.
MTF	Multilateral Trading Facility: a trading system that brings together multiple third-party buying and selling interests in financial instruments.
OCXE	OneChronos EU MTF: the Netherlands based Multilateral Trading Facility operated by OneChronos.
OCXL	OneChronos UK MTF: the UK Multilateral Trading Facility operated by OneChronos.
Offset	The position (in bytes) of a field within a message, measured from the start of the message.
Opening Auction	An auction held by the Listing Exchange at the start of the trading day to determine the opening price of a security.
Optional Field	A field that may or may not be present in a message, typically indicated by a sentinel value (e.g., max u64).
Venue of Publication	The Publishing Exchange is the same as the Executing Exchange

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Term	Definition
RTS	Regulatory Technical Standards: detailed rules and procedures that implement MiFID II requirements.
Schema ID	An identifier for the message schema, always 19 in this protocol.
Sequence Number	A unique, incrementing number assigned to each message, starting at 1 each trading day.
Template ID	An identifier for the message type (e.g., 1 for Heartbeat, 2 for LastTrade).
Timestamp	Timestamps: ISO 8601 UTC format. This is derived from internal timestamps by truncating to microseconds. OneChronos supports UTC timestamps at nanosecond precision. See the section "**Data Types & Encoding**" for additional detail.
UDP Multicast	A method of sending network messages to a group of destinations simultaneously, used here for distributing market data.
Width	The size (in bytes) of a field within a message.

Connectivity

To discuss connectivity, contact **ops_europe@onechronos.com**.

Market Hours

- Feed availability: Monday–Friday, 08:00 – 18:30 CET (excluding market holidays).
    - From 08:00 CET, the multicast feed is live and will emit heartbeat messages at 1-second intervals.
- Trading hours: Monday–Friday, 09:00 – 17:30 CET (excluding market holidays).
- Trading commences once the relevant security has opened on its primary listing market. Trading ceases when the primary market enters its closing auction or when the primary reference price becomes unavailable.

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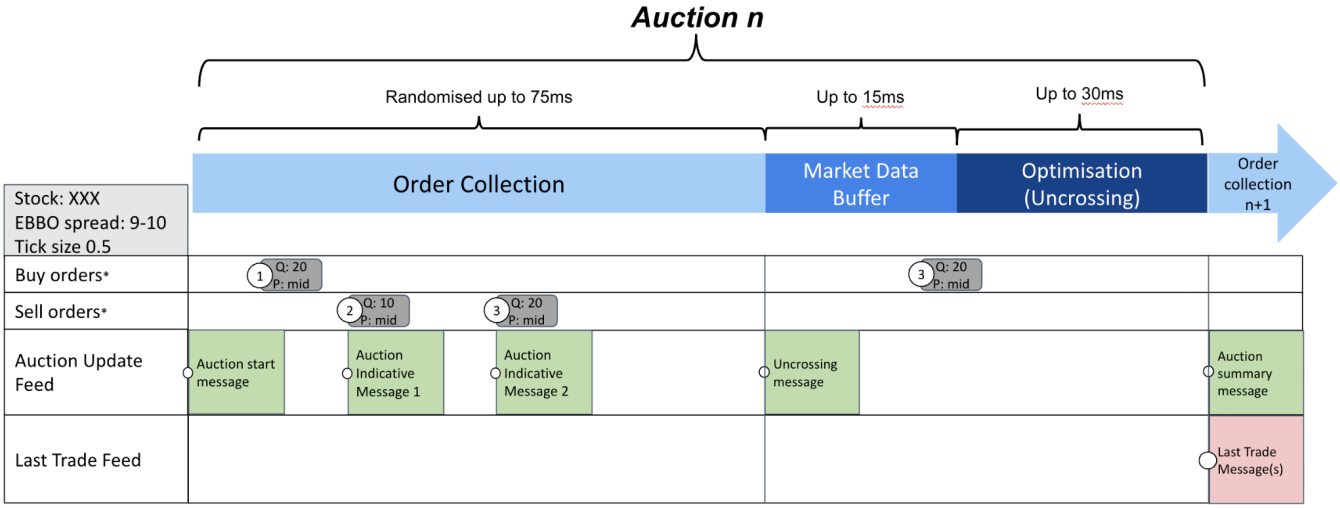
Message Publication Timeline



Auction Update Feed:

- A venue-wide Auction Start Message communicates the start of the Order Collection phase.
- If and when the order book becomes crossed, the first security specific Auction Indicative Message is published showing what is potentially executable in the auction. Any changes to the order book or EBBO reference that changes this information prior to the transition into the Uncrossing Phase (Market Data Buffer and Optimisation) are reflected by publishing a new Auction Indicative Message - in this example 'Auction Indicative Message 2'.
    - Orders arriving after the transition into the Uncrossing phase do not participate in auction n, and are queued for the start of auction n+1. These orders will also not contribute to the auction indicative messages of auction n.
- A venue-wide Uncrossing message is published when the order book transitions into the Uncrossing Phase. This message communicates the locking of orders in the orderbook when criteria for locking in that security are met.
- A security specific auction summary message is published at the end of the optimisation, only when there has been an execution in the security
    - Both the Auction Indicative Message and Auction Summary Message support two price and quantity fields, as well as an intended price and total quantity. The second price and quantity fields are used when OneChronos requires multiple price points to uncross an auction.
- OneChronos will then immediately start auction+1 (see point 1).
- Security State Change messages are also published on this feed.

Last Trade Feed:

- After the conclusion of a full auction cycle (end of Optimisation), any execution(s) are published per security to meet post trade transparency requirements on the Last Trade Feed.

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Identifiers

Securities are uniquely identifiable using a combination of:

- ISIN (12 characters)
- Listing MIC
- Currency

No two securities will have the same combination of these fields.

Sequencing & Recovery

- Each message carries a sequenceNumber (u64), starting at 1 each trading day.
- Heartbeat messages (templateId = 1) are sent every 1 second and always increment sequenceNumber.
- Gap detection: Clients should monitor sequence numbers.
- Recovery model: no replay is available

Data Types & Encoding

- Character fields (char(n)) are fixed-length ASCII strings.
- Enums are encoded as char values as specified in the relevant enum tables (e.g. SecurityStatus, HaltReason, SuspensionReason).
- Null unsigned integer values are encoded as the max value of the integer (all bits = 1). Null signed integer values are encoded as the min value of the integer.
- Price is a string of ASCII numbers(0–9) consisting of 8 whole number digits, followed by an explicit decimal point, followed by 9 decimal digits.
- Timestamps: Timestamps are encoded as char(27) in ISO 8601 UTC format: YYYY-MM-DDThh:mm:ss.ddddddZ (microsecond precision, UTC). This applies to all timestamp fields, including transparency event timestamps (e.g., updateDateAndTime, auctionCallTime) and heartbeat timestamps (e.g., sendTime).
- Endianness: Little-endian

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Message Catalogue

TemplateId Reference Table

templateId	Message Type
1	Heartbeat
2	LastTrade
3	AuctionStart
4	AuctionUncrossing
5	AuctionIndicative
6	AuctionSummary
7	SecurityStateChange

Message Definitions

Detailed field-by-field message definitions for the following message types are included:

- LastTrade
- AuctionStart
- AuctionUncrossing
- AuctionIndicative
- AuctionSummary
- SecurityStateChange

See **Appendix A** for detailed schema tables including offsets and reserved fields.

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Appendix A – Schema Definitions (Full)

Enums

SecurityStatus

Value	Encoding
Trading	T
Closed	C
Halted	H
Suspended	S

HaltReason

Value	Encoding
Null	[NULL]
MarketState	M
StaleReference	S
ManualHalt	H
Unspecified	U

SuspensionReason

Value	Encoding
Null	[NULL]
NcaSuspension	N
ManualSuspension	M
Unspecified	U

Optional Values

Null unsigned integer values are encoded as the max value of the integer (all bits = 1). Null signed integer values are encoded as the min value of the integer.

Value	Encoding
0	0
1	1
…	…
Null	u64 max

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Message Header

Field name	Type	Offset	Width	Description
sequenceNumber	u64	0	8	The sequence number of the message starting every day at 1
reserved	u8	8	1	Reserved
blockLength	u16	9	2	The length of the message, excluding the header
templateId	u16	11	2	The template id of the message (Heartbeat=1, AuctionStart=3, etc.)
schemaId	u16	13	2	Always 19
version	u16	15	2	The version of message, currently 1

Last Trade Messages (schemaId=19)

Heartbeat (templateId=1)

Field name	Type	Offset	Width
Header	-	0	17
executingExchange	char(4)	17	4
sendTime	char(27)	21	27

Notes:

- Sent every 1 second during trading sessions and idle periods.
- Always increments sequenceNumber.
- Provides a continuous liveness signal for clients and supports gap detection.
- Heartbeat messages are generated even when no auction/trade events occur.

LastTrade (templateId=2)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXE or OCXL
tradingSystem	char(4)	21	4	“PATS” – periodic auction trading system
executionDateTime	char(27)	25	27	Date and time the transaction was executed
publicationDateAndTime	char(27)	52	27	Publication date and time
auctionId	u64	79	8	Auction identifier
listingExchange	char(4)	87	4	MIC of the listing exchange
currency	char(3)	91	3	Currency
isin	char(12)	94	12	ISIN
priceNotation	char(4)	106	4	“MONE” — Monetary value in the case of equity and equity-like financial instruments

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Field name	Type	Offset	Width	Description
price	char(18)	110	18	Trade price
quantity	u64	128	8	Quantity traded
TIC	char(30)	136	30	Transaction identification code
flags	char(4)	166	4	"ALGO" – Algorithmic transaction flag "CANC" – Cancellation flag
reserved	-	170	16	Reserved

Auction Update Messages (schemaId=19)

Heartbeat (templateId=1)

Field name	Type	Offset	Width
Header	-	0	17
executingExchange	char(4)	17	4
sendTime	u64	21	27

AuctionStart (templateId=3)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXL or OCXE
updateDateAndTime	char(27)	21	27	Time order entry period started
auctionId	u64	48	8	Auction identifier

AuctionUncrossing (templateId=4)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXL or OCXE
updateDateAndTime	char(27)	21	27	Time optimisation started
auctionId	u64	48	8	Auction identifier

AuctionIndicative (templateId=5)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXL or OCXE
tradingSystem	char(4)	21	4	"PATS" – periodic auction trading system
tradingSystemPhase	char(4)	25	4	"UDUC" – Undefined Auction
updateDateAndTime	char(27)	29	27	Time indicative price calculated

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Field name	Type	Offset	Width	Description
publicationDateAndTime	char(27)	56	27	Publication date and time
auctionId	u64	83	8	Auction identifier
listingExchange	char(4)	91	4	MIC of listing exchange
currency	char(3)	95	3	Currency
isin	char(12)	98	12	ISIN
priceNotation	char(4)	110	4	"MONE" — Monetary value in the case of equity and equity-like financial instruments
price1	char(18)	114	18	Indicative price 1 (always set)
quantity1	u64	132	8	Quantity at price1 (always set)
price2	Optional char(18)	140	18	Indicative price 2 (if two clearing prices)
quantity2	Optional u64	158	8	Quantity at price2 (if two clearing prices)
intendedPrice	char(18)	166	18	Where the auction uncrosses at a single price, this field reflects that price. Where the auction uncrosses at multiple price points, this field contains the intended clearing price prior to the adjustments required to adhere to tick-size.
totalQuantity	u64	184	8	Total quantity indicated
reserved	-	192	16	Reserved

AuctionSummary (templateId=6)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXL or OCXE
executionDateTime	char(27)	21	27	Date and time the transaction was executed
auctionId	u64	48	8	Auction identifier
listingExchange	char(4)	56	4	MIC of listing exchange
currency	char(3)	60	3	Currency
isin	char(12)	63	12	ISIN
priceNotation	char(4)	75	4	"MONE" — Monetary value in the case of equity and equity-like financial instruments
price1	char(18)	79	18	Clearing price 1 (always set)
quantity1	u64	97	8	Quantity at price1
price2	Optional char(18)	105	18	Clearing price 2 (if exists)
quantity2	Optional u64	123	8	Quantity at price2

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Field name	Type	Offset	Width	Description
intendedPrice	char(18)	131	18	Where the auction uncrosses at a single price, this field reflects that price. Where the auction uncrosses at multiple price points, this field contains the intended clearing price prior to the adjustments required to adhere to tick-size.
totalQuantity	u64	149	8	Total quantity indicated
reserved	-	157	16	Reserved

SecurityStateChange (templateId=7)

Field name	Type	Offset	Width	Description
Header	-	0	17	Message header
executingExchange	char(4)	17	4	OCXL or OCXE
updateDateAndTime	char(27)	21	27	Time state changed
auctionId	u64	48	8	Auction identifier
listingExchange	char(4)	56	4	MIC of listing exchange
currency	char(3)	60	3	Currency
isin	char(12)	63	12	ISIN
securityStatus	enum	75	1	Trading, Closed, Halted, Suspended
haltReason	enum	76	1	MarketState, StaleReference, Manual, etc.
suspensionReason	enum	77	1	NCA Suspension, Manual, etc.
reserved	-	78	16	Reserved

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