dxFeed Market Data
QD-model of market events

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Contents

1. Introduction

All events that occur on exchanges (placed and canceled orders, trades, and so on) are received by dxFeed in individual formats and in accordance with the protocols of each exchange. Hereupon dxFeed normalizes all the data into its own records with a predefined set of fields – dxFeed internal QD-model (Quote Distribution).

NB! For clients' access to data feeds we provide dxFeed API with a simplified set of events model. You can learn more about events and classes in dxFeed API.

Records in QD-model are described below.

2. Exchange codes for US Equities and Options

On US market, different exchanges may trade the same instruments. Cumulative feed of events from all exchanges altogether we call **composite**. Individual events from each exchange we call **regional**. To distinguish regional events, each exchange has a corresponding code. The list of the codes you can find in the tables below.

In Europe, there are no regional events: each financial instrument has different ticker symbol at each European exchange.

CTA/UTP data feed

Code	Related exchange	MIC
A	NYSE MKT Stock Market	AMEX
B	NASDAQ OMX BX Stock Exchange	XBOS
C	National Stock Exchange	XCIS
D	Financial Industry Regulatory Authority	FINR
E	Consolidated Quotation System	
I	International Securities Exchange	XISE
J	Cboe EDGA U.S. Equities Exchange	EDGA
K	Cboe EDGX U.S. Equities Exchange	EDGX
M	Chicago Stock Exchange	XCHI
N	New York Stock Exchange	XNYS
P	NYSE Arca SM	ARCX
Q	NASDAQ OMX	XNAS
V	Investors' Exchange LLC	IEXG
W	Cboe Stock Exchange	CBSX

X	NASDAQ OMX PSX Stock Exchange	XPSX
Y	Cboe BYX U.S. Equities Exchange	BATY (BYX)
Z	Cboe BZX U.S. Equities Exchange	BATS (BZX)

Nasdaq Basic data feed

Code	Related exchange	MIC
B	NASDAQ OMX BX Stock Exchange	XBOS
L	NASDAQ/FINRA TRF Carteret	FINN
Q	NASDAQ OMX	XNAS
X	NASDAQ OMX PSX Stock Exchange	XPSX

OTC data feed

Code	Related exchange	MIC
U	OTCBB	XOTC
V	OTC Markets	OTCM

US Options

Code	Related exchange	MIC
A	NYSE MKT	XASE
B	Boston Options Exchange	XBOX
C	Cboe Global Markets	XCBO
D	MIAX EMERALD	EMLD
E	Cboe EDGX Options	EDGO
H	ISE GEMINI	GMNI
I	International Securities Exchange	XISX
J	ISE MERCURY Exchange	MCRY
M	Miami International Securities Exchange	XMIO
N	NYSE ARCA Options	ARCO
P	MIAX Pearl	MPRL
Q	NASDAQ Options Market	XNDQ
T	NASDAQ OMX BX Options	XBXO

W	C2 Options Exchange	C2OX
X	NASDAQ OMX PHLX	XPHL
Z	Cboe BZX Options Exchange	BATO

3. Records description

Records in QD-model are described below. If you plan to use dxFeed API to process dxFeed market data, please check this documentation.

3.1. EventFlags field

Any record may contain **EventFlags** field that is meant for the reconstruction of order books, options chains, or charts. Its values describe the order in which records are processed. QD text/csv format does not contain this field in the head description, but this flag may appear in the end of any string. If there is no Event flag, it is considered false.

NB! To learn order book reconstruction algorithm and corresponding details, see dxFeed Order Book Reconstruction document.

- TX_PENDING indicates a pending transactional update. When TX_PENDING is true, it means that an ongoing transaction update, that spans multiple events, is in process.
- REMOVE_EVENT indicates that the event with the corresponding index has to be removed.
- SNAPSHOT_BEGIN indicates when the loading of a snapshot starts. Snapshot load starts on new subscription and the first indexed event that arrives for each exchange code (in case of regional record) on new subscription may have SNAPSHOT_BEGIN set to true. It means, that an ongoing snapshot consisting of multiple events is incoming.
- SNAPSHOT_END or SNAPSHOT_SNIP indicates the end of a snapshot. The difference between SNAPSHOT_END and SNAPSHOT_SNIP is the following: SNAPSHOT_END indicates that the data source had sent all the data pertaining to the subscription for the corresponding indexed event, while SNAPSHOT_SNIP indicates that some limit on the amount of data was reached and while there still might be more data available, it will not be provided.
- SNAPSHOT_MODE instructs dxFeed to use snapshot mode. It is intended to be used only for publishing to activate (if not yet activated) snapshot mode. The difference from SNAPSHOT_BEGIN flag is that SNAPSHOT_MODE only switches on snapshot mode without starting snapshot synchronization protocol.

4. Quote

Snapshot of the best bid and ask prices, and other fields that may change with each quote. It represents the most recent information that is available about the best quote on the market at any given moment of time.

```
#=Quote,EventSymbol,EventTime,BidTime,BidExchangeCode,BidPrice,BidSize,A
skTime,AskExchangeCode,AskPrice,AskSize
Quote,FBGX,20180926-100000.000-0400,20180926-095959-
0400,Q,297.01,25,20180926-095959-0400,Q,298.23,25
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
BidTime	Time of the last bid change
BidExchangeCode	Bid exchange code
BidPrice	Bid price
BidSize	Bid size
AskTime	Time of the last ask change
AskExchangeCode	Ask exchange code
AskPrice	Ask price
AskSize	Ask size

5. Quote&X (regional quote)

Similar to Quote, but represents best bid and offer for a given exchange code. For possible values of **X** please refer to Exchange codes chapter.

```
#=Quote&Z,EventSymbol,EventTime,BidTime,BidPrice,BidSize,AskTime,AskPric
e,AskSize
Quote&Z,MU,20180926-100000.000-0400,20180926-095959-
0400,44.33,4,20180926-095959-0400,44.34,1
```

6. Profile

Snapshot of a security instrument description. It represents the most recent information that is available about the traded security on the market at any given moment of time.

#=Profile,EventSymbol,EventTime,Beta,Eps,DivFreq,ExdDivAmount,ExdDivDate,HighPrice52,LowPrice52,Shares,FreeFloat,HighLimitPrice,LowLimitPrice,HaltStartTime,HaltEndTime,Flags,Description,StatusReason
Profile,FPI,20180926-100000.135-0400,0.01985423,-0.06,4,0.05,20180928,9.68,5.15,3.2867817000000004E7,NaN,NaN,NaN,0,0,10,"Farmland Partners Inc","Trading Range Indication"

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
Beta	The correlation coefficient of the instrument to the S&P500 index (calculated, or received from other data providers)
Eps	Earnings per share (the company's profits divided by the number of shares). The value comes directly from the annual quarterly accounting reports of companies. Available generally for stocks
DivFreq	Frequency of cash dividends payments per year (calculated)
ExdDivAmount	The amount of the last paid dividend
ExdDivDate	Date of the last dividend payment
HighPrice52	The maximum price for 52 weeks (calculated from the current date)

Field	Description
LowPrice52	The minimum price for 52 weeks (calculated from the current date)
Shares	Shares outstanding. In general, this is the total number of shares issued by this company (only for stocks)
FreeFloat	The number of shares outstanding that are available to the public for trade. This field always has NaN value.
HighLimitPrice	Maximum (high) allowed price
LowLimitPrice	Minimum (low) allowed price
HaltStartTime	Start time of the trading halt interval
HaltEndTime	End time of the trading halt interval
Flags	This field contains several individual flags encoded as an integer number the following way: * 31..4 3 2 1 0 * +--------+----+----+----+----+ * | | *SSR* | *Status* | * +--------+----+----+----+----+ 1. *SSR (shortSaleRestriction)* **–** special mode of protection against "shorting the market", this field is optional (**0 –** undefined, **1 –** active, **2** – inactive) 2. *Status* (*tradingStatus*) - the state of the instrument (**0** – status undefined, **1** – trading is halted, **2** – trading is active)
Description	Description of the security instrument
StatusReason	The reason why trading is halted

7. Order#X

A snapshot that contains all available depth of market. **X** may stand for:

- NTV – Nasdaq TotalView feed
- DEA – Cboe EDGA feed
- DEX – Cboe EDGX feed
- BYX – Cboe BYX feed
- BZX – Cboe BZX feed
- IST – Borsa Istanbul feed
- ISE – ISE feed
- GLBX – Globex feed

```
#=Order#NTV,EventSymbol,EventTime,Void,Index,Time,Sequence,Price,Size,Fl
ags,MarketMaker
Order#NTV,A,20180925-195959.999-
0400,0,24,0,0,NaN,0,3,\NULL,EventFlags=SNAPSHOT_BEGIN
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
Void	Additional insignificant field; always 0
Index	Unique index in order book
Time	Time of this order

Field	Description
Sequence	Sequence of this order, may include milliseconds (e.g., “857:3”)
Price	Price of this order
Size	Size of this order
Flags	This field contains several individual flags encoded as an integer number the following way: * 31..11 10...4 3 2 1 0 * +--------+-----------+----+----+----+----+ * | | *Exchange* | *Side* | *Scope* | * +--------+-----------+----+----+----+----+ 1. *Exchange* – exchange code. For possible values of **Exchange** please refer to Exchange codes chapter. 2. *Side* – the initiator of an order (**0** – side is undefined, **1** – buy side, **2** – sell side) 3. *Scope* – specification of the order value (**2** - aggregated information or BBO for a particular market maker, **0** – composite BBO from the whole market, **3** – individual order, **1** – regional BBO from a particular exchange)
MarketMaker	Market maker or other aggregate identifier of this order (optional field)

8. MarketMaker

This record contains data aggregated by price (price level book), by Market Maker, or by bank.

```
#=MarketMaker,EventSymbol,EventTime,ExchangeCode,MarketMaker,BidTime,Bid
Price,BidSize,BidCount,AskTime,AskPrice,AskSize,AskCount
MarketMaker,INTC,20180925-195959.999-0400,Q,XGWD,20180925-160004-
0400,44.36,0,0,20180925-160004-0400,48.18,0,0,EventFlags=SNAPSHOT_BEGIN
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
ExchangeCode	Exchange code
MarketMaker	One of these, depending on the feed: • ID of the Market Maker (e.g., Nasdaq Level 2, OTC or OTCBB) • Price-level number (e.g., CME, ICE, Nasdaq TotalView), • Bank identifier (e.g., Forex feed)
BidTime	Time of the last bid change
BidPrice	Bid price
BidSize	Bid volume
BidCount	The sequence of the bid in the aggregated feed
AskTime	The time of the last ask change
AskPrice	Ask price
AskSize	Volume ask
AskCount	The sequence of the ask in the aggregated feed

9. Summary

Summary information snapshot about the trading session that includes session's highs, lows, etc. It represents the most recent information that is available about the trading session on the market at any given moment of time.

```
#=Summary,EventSymbol,EventTime,DayId,DayOpenPrice,DayHighPrice,DayLowPr
ice,DayClosePrice,PrevDayId,PrevDayClosePrice,PrevDayVolume,OpenInterest
,Flags
Summary,AON,20180926-100000.018-
0400,20180926,155.82,156,154.82,NaN,20180925,155.81,NaN,0,3
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
DayId	Identifier of the day that this summary represents
DayOpenPrice	The first (open) price of the day
DayHighPrice	Maximum (high) price of the day
DayLowPrice	Minimum (low) price of the day
DayClosePrice	The last (close) price of the day
PrevDayId	Identifier of the previous day
PrevDayClosePrice	The last (close) price of the previous day
PrevDayVolume	Total volume traded of the previous day
OpenInterest	Open interest of the symbol (number of open contracts)
Flags	This field contains several individual flags encoded as an integer number the following way: * 31..4 3 2 1 0 * +--------+----+----+----+-------+ * | | *Close* |*PrevClose*| * +--------+----+----+----+-------+ 1. *Close* (*dayClosePriceType*) – parameter that shows if the closing price is final (**0** – regular price, **1** – indicative price, **2** – preliminary price, **3** – final price) 2. *PrevClose* (*prevDayClosePriceType*) - parameter that shows if the closing price of the previous day is final (**0** – regular price, **1** – indicative price, **2** – preliminary price, **3** – final price)

10. Summary&X (regional Summary)

Similar to Summary event but represents summary information for a given exchange code. For possible values of **X** please refer to Exchange codes chapter.

```
#=Summary&P,EventSymbol,EventTime,DayId,DayOpenPrice,DayHighPrice,DayLow
Price,DayClosePrice,PrevDayId,PrevDayClosePrice,Flags
Summary&P,MRK,20180926-100000.006-
0400,20180926,70.94,71.14,70.8,NaN,20180925,70.65,3
```

11. Trade

Snapshot of the price and size of the last trade during regular trading hours and an overall day volume and day turnover. It represents the most recent information that is available about the last regular trade on the market at any given moment of time.

```
#=Trade,EventSymbol,EventTime,Time,Sequence,ExchangeCode,Price,Size,Tick
,Change,Flags,DayVolume,DayTurnover
Trade,BABA,20180926-100000.002-0400,20180926-095959-
0400,0,D,166.74,100,1,2.49,0,2813392,NaN
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
Time	Time of the last trade
Sequence	Sequence of the last trade
ExchangeCode	Exchange code of the last trade
Price	Price of the last trade
Size	Size of the last trade
Tick	Trend indicator – in which direction price is moving. The values are **up**, **down**, and **undefined**
Change	Value equals **Price** minus **prevdaycloseprice** (the value of **prevdaycloseprice** is retrieved from **Summary**)

Flags	This field contains several individual flags encoded as an integer number the following way:
	
	`*  31..4     3    2    1     0`
	`* +--------+----+----+----+-------+`
	`* |        |  Direction  | ETH |`
	`* +--------+----+----+----+-------+`
	
	1. *Direction* (*tickDirection*) is the more accurate definition of the trend (**0** – undefined, **1** – down, **2** – zero down (current price is the same as previous price and is lower than the last known price of different value), **3** – zero (current price is equal to the only known price value suitable for price direction computation), **4** – zero up (current price is the same as previous price and is higher than the last known price of different value), **5** – up)
	2. *ETH* (*extendedTradingHours*) – flag that determines current trading session: extended or regular (**0** – regular trading hours, **1** – extended trading hours)

DayVolume	Total volume traded for a day
DayTurnover	Total turnover traded for a day

12. Trade&X (regional Trade)

Similar to [Trade](#) but represents trades for a given exchange code. For possible values of **X** please refer to [Exchange codes](#) chapter.

```
#=Trade&D,EventSymbol,EventTime,Time,Sequence,Price,Size,Tick,Change,Fla
gs,DayVolume,DayTurnover
Trade&D,BABA,20180926-100000.002-0400,20180926-095959-
0400,0,166.74,100,1,2.48,0,929667,NaN
```

13. TradeETH

Snapshot of the price and size of the last trade during extended trading hours, and the extended trading hours day volume and day turnover. This record is defined only for symbols (typically stocks and ETFs) that have extended trading hours (ETH, pre-market and post-market trading sessions). It represents the most recent information that is available about ETH last trade on the market at any given moment of time.

```
#=TradeETH,EventSymbol,EventTime,Time,Sequence,ExchangeCode,Price,Size,F
lags,DayVolume,DayTurnover
TradeETH,SPLPpA,20180926-100154.380-0400,20180920-160124-
0400,0,D,22.65,454,0,0,NaN
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
Time	Time of the last trade
Sequence	Sequence of the last trade
ExchangeCode	Exchange code of the last trade
Price	Price of the last trade
Size	Size of the last trade
Flags	Same as in Trade event
DayVolume	Total volume traded during extended trading hours
DayTurnover	Total turnover traded extended trading hours

14. TradeETH&X (regional TradeETH)

Similar to TradeETH but represents ETH trades for a given exchange code. For possible values of **X** please refer to Exchange codes chapter.

```
#=TradeETH&P,EventSymbol,EventTime,Time,Sequence,Price,Size,Flags,DayVol
ume,DayTurnover
TradeETH&P,CRVS,20180926-100000.155-0400,20180815-092803-
0400,0,9.69,100,0,35,NaN
```

15. TimeAndSale

Represents a trade or other market event with price, like market open/close price, etc. **TimeAndSale** record is intended to provide information about trades in a continuous time slice (unlike **Trade** events, which are supposed to provide a snapshot of the current last trade).

```
#=TimeAndSale,EventSymbol,EventTime,Time,Sequence,ExchangeCode,Price,Siz
e,BidPrice,AskPrice,SaleConditions,Flags
```

```
TimeAndSale,BABA,20180926-100000.002-0400,20180926-095959-
0400,872:33427,D,166.8177,31,166.71,166.74," 4 I",12576
```

Field	Description
EventSymbol	Symbol of this event
EventTime	Time when this event has been registered in dxFeed system (filled only for historical data; not filled for real-time data feed)
Time	Timestamp of the original event
Sequence	Sequence number of this event, may include milliseconds (e.g., "857:3")
ExchangeCode	Exchange code of this time and sale event
Price	Price of this time and sale event
Size	Size of this time and sale event
BidPrice	The current bid price on the market when this time and sale event had occurred
AskPrice	The current ask price on the market when this time and sale event had occurred
SaleConditions	Sale conditions provided for this event by data feed (you can find list of parameters in the TimeAndSale Conditions map)
Flags	This field contains several individual flags encoded as an integer number the following way: * 31..16 15...8 7 6 5 4 3 2 1 0 * +--------+--------+----+----+----+----+------+------+----+----+ * | | *TTE* | | *Side* | *SL* | *ETH* | *VT* | *Type* | * +--------+--------+----+----+----+----+------+------+----+----+ 1. *Tradethroughexempt* (*TTE*) is a transaction concluded by exempting from compliance with some rule. The value is encoded by the letter. 2. *Side* (*aggressorSide*) – initiator of the trade, may have value (**0** – side is undefined, **1** – buy side, **2** – sell side). 3. *SL* (*spreadLeg*) – an indication of whether this transaction is a part of a multi-leg order (**0** – single order, **1** – multi-leg order). 4. *ETH* (*extendedTradingHours*) – whether the transaction is completed during extended trading hour (**0** – regular trading hours, **1** – extended trading hours). 5. *VT* (*validTick*) – our normalized SaleCondition flag (**1** – the tick is valid and must be drawn on the chart service, **0** – this is most likely not a transaction and does not need to be displayed). 6. *Type* – type of event (**0** – new, **1** – correction on a Time and Sale event, **2** – cancel of a Time and Sale event).

16. TimeAndSale&X (regional TimeAndSale)

Similar to TimeAndSale but represents Time And Sale event for a given exchange code. For possible values of X please refer to Exchange codes chapter.

```
#=TimeAndSale&P,EventSymbol,EventTime,Time,Sequence,ExchangeCode,Price,S
ize,BidPrice,AskPrice,SaleConditions,Flags
TimeAndSale&P,AMZN,20180802-030000.059-0500,20180802-030000-
0500,13:0,P,1799,1,1798.97,1800,"@ TI",8264
```