Global Exchanges & Markets Committee

Deutsche Börse Market Data Statistics

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Document History

Revision	Date	Author	Revision Comments
0.1	September 6, 2013	Hanno Klein, Deutsche Börse Group	Initial draft
0.2	September 20, 2013	Hanno Klein, Deutsche Börse Group	Corrections and additions after GExMC call on Sep 9. Included previous work from CME and OMX in 2006. • Added verbose text to describe business requirements in detail. • Added usage examples. • Added underlying and leg level information for instrument. • Changed repeating group of instruments in request to single component. • Added enum values for scope and type of statistics. • Defined enums for ratio types. • Added interval type to support sliding windows, relative and fixed date/time ranges. • Added possibility of deferred publication. • Corrected parameters to be optional in request
0.3	September 23, 2013	Hanno Klein, Deutsche Börse Group	Submission to GTC after GExMC call on Sep 23. No further changes.
ASBUILT	May 5, 2014	L. Taikitsadaporn	prep ASBUILT • Added new value "Q" for Quarter to TimeUnit(997) and changed MDStatisticIntervalTypeUnit(~~tbd~~2465) to use values from TimeUnit(997)

1 Introduction

1.1 Background

FIX offers a number of market data messages to convey information about the current order book of a market place. FIX market data can cover individual orders/quotes or aggregated orders/quotes per price level as well as trades resulting from executions of these orders/quotes. It also covers specific prices that occur only at certain points in time during a trading day, e.g. opening or closing prices.

Market data statistics is an area that is not well covered in FIX today. There are a few fields that contain statistical information such as high/low values, trade volume or a trading session VWAP. However, there are a large number of additional and more complex statistics that need to be covered. A key feature that is also missing today is the ability to define a time interval for which a statistic has been calculated.

It is therefore suggested to introduce a new set of Market Data Statistics messages that allow to request and report such information in a flexible manner. The extension of the existing market data messages is not advisable.

1.2 Summary of Changes

In order to support market data statistics, the following new messages are added to FIX.

- **MarketDataStatisticsRequest**(35=~~tbd~~DO) to request statistical information from a market place
- **MarketDataStatisticsReport**(35=~~tbd~~DP) to provide statistical information

In order to allow identifiers and names to be assigned to pre-defined statistical reports, new fields **MDStatisticID**(~~tbd~~2475)**, MDStatisticName**~~Symbol~~(~~tbd~~2454), and **MDStatisticDesc**(~~tbd~~2455) are introduced. Parameters for statistics are grouped into a new, non-repeating component **MDStatisticParameters**.

In order to identify the messages exchanged for market data statistics, new fields **MDStatisticReqID**(~~tbd~~2452) and **MDStatisticRptID**(~~tbd~~2453) are introduced with a new counter field **NoMDStatistic**(~~tbd~~2474).

In order to qualify the response to a request for statistical information, a new field **MDStatisticRequestResult**(~~tbd~~2473) is introduced.

In order to allow multiple statistics in a single request or report, new repeating groups **MDStatisticReqGrp** and **MDStatisticRptGrp** are introduced.

In order to define the basic type of statistic, new fields **MDStatisticType**(~~tbd~~2456) and **MDStatisticRatioType**(~~tbd~~2472) are introduced.

In order to define the entities upon which the calculation is conducted, new fields **MDStatisticScope**(~~tbd~~2457)**, MDStatisticSubScope**(~~tbd~~2458) and **MDStatisticScopeType**(~~tbd~~2459) are introduced.

In order to define the frequency with which statistics will be disseminated, the new fields **MDStatisticFrequencyPeriod**(~~tbd~~2460) and **MDStatisticFrequencyUnit**(~~tbd~~2461) are introduced.

In order to allow deferred publication of market data, the new fields **MDStatisticDelayPeriod**(~~tbd~~2462) and **MDStatistictDelayUnit**(~~tbd~~2463) are introduced.

In order to define the time interval or range that represents the basis for the calculation, the new fields **MDStatisticIntervalType**(~~tbd~~2464), **MDStatisticIntervalTypeUnit**(~~tbd~~2465)**, MDStatisticIntervalPeriod**(~~tbd~~2466), **MDStatisticIntervalUnit**(~~tbd~~2467), **MDStatisticStartDate**(~~tbd~~2468), **MDStatisticEndDate**(~~tbd~~2469), **MDStatisticStartTime**(~~tbd~~2470)**e** and **MDStatisticEndTime**(~~tbd~~2471) are introduced.

In order to convey the actual statistical value, the new fields **MDStatisticValue**(~~tbd~~2478), **MDStatisticValueType**(~~tbd~~2479), **MDStatisticValueUnit**(~~tbd~~2480) and **MDStatisticTime**(~~tbd~~2476) are introduced.

In order to define statistics as active or inactive, a new field **MDStatisticStatus(~~tbd~~2477)** is introduced.

2 Business Workflow

Market places use the raw market data to calculate statistical information which then serves as official data that can be used by participants to support their trading algorithms and decision making process. The market place might offer pre-defined statistics which are typically broadcast to participants that have subscribed to the service. A more flexible alternative is to allow the participant to request tailor-made statistics by means of a set of parameters offered by the market place. This could either be a request/response workflow or a request triggering a subsequent broadcast of statistical information.

The objective of this proposal is to introduce new messages for market data that allow the separation of raw market data from value-added data. This will also support a business model where these two types of information services are priced differently for the subscribers. It gives a clearer distinction of what kind of market data is actually provided.

The following enhancements are proposed:

- New message MarketDataStatisticsRequest(MsgType=~~TBD~~DO) with new repeating group <MDStatisticReqGrp> and new component <MDStatisticParameters> to request for statistics
- New message MarketDataStatisticsReport(MsgType=~~TBD~~DP) with new repeating group <MDStatisticRptGrp> and new component <MDStatisticParameters> to report statistics
- New fields MDStatisticReqID(~~TBD~~2452), MDStatisticRptID(~~TBD~~2453), MDStatisticRequestResult(~~TBD~~2473) to control message flow

The following sections describe the key business requirements for the dissemination of market data statistics. The nature of the requirements is significantly complex so that it is assumed that a comprehensive list of items cannot be compiled at this time. Therefore, a general requirement is to allow user-defined values of fields for market data statistics wherever possible and useful.

2.1 Basic Information

Any statistic need to be related to one or more instruments, possibly to a named group of instruments, including market segments or entire markets as well as a set of ~~welldefined~~well-defined parameters. A statistic should be associated with a business date and time of its dissemination. Statistical values can be either absolute or expressed as percentages.

For performance reasons, it must be possible to associate an identifier with a given set of parameters to avoid having to repeatedly send the parameters every time a statistical value is provided or updated.

The following enhancements are proposed:

- New fields MDStatisticID(~~TBD~~2475), MDStatisticName~~Symbol~~(~~TBD~~2454), MDStatisticDesc(~~TBD~~2455) to uniquely identify a statistic
- New fields MDStatisticTime(~~TBD~~2476), MDStatisticValue(~~TBD~~2478), MDStatisticValueType(~~TBD~~2479), MDStatisticValueUnit(~~TBD~~2480), MDStatisticStatus(~~TBD~~2477) to convey actual statistics

2.2 Types of Statistics

Given a set of entities (see Chapter *2.3 Entities*), it is required to calculate a variety of statistics ranging from simple values to complex ratios or distribution percentages.

- Counting a number of entities

- Averaging or aggregating volume and turnover (amount) information
- Identifying important prices of entities, e.g. high, low, mid, first , last, final, best
- Identifying benchmark prices, e.g. VWAP, TWAP
- Calculating a distribution of entities based on an attribute, e.g. percentage of limit orders
- Calculating a pre-defined ratio between entities of the same or of different types, e.g. ratio of buyer to sellers in trades or ratio of program trading
- Calculating the liquidity of an instrument, e.g. the bid/offer spread
- Calculating the volatility of an instrument or index, e.g. changes of incoming order prices
- Calculating the duration of entities, e.g. resting time of passive orders

The following enhancements are proposed:

- New field MDStatisticType(~~TBD~~2456) and MDStatisticRatioType(~~TBD~~2472) to define the type of statistic

2.3 Entities

There ~~is~~are a large number of entities that need to be able to be subject to a calculation of statistics. The most obvious ones are orders, quotes and trades whereby it could be the entity itself or only its price or volume.

Further entities are more specific such as special prices or volumes. Examples are:

- Auction prices
- Opening/Closing prices
- Settlement prices
- Underlying prices
- Open interest
- Index values
- Margin rates
- Book depth

A number of **static** entity attributes are required as parameters to reduce the scope and may or may not apply to an individual entity, for example:

- Order visibility, e.g. hidden orders
- Order side, e.g. buy orders
- Order type, e.g. limit orders
- Order validity, e.g. IOC orders
- Quote type, e.g. indicative quotes
- Trading capacity, e.g. customer orders
- Trading session, e.g. continuous trading
- Book depth, e.g. top of book

A number of **dynamic** entity attributes are required as parameters to reduce the scope and may or may not apply to an individual entity, for example:

- Transaction types, e.g. order entry
- Prices moves, e.g. upticks

The following enhancements are proposed:

- New fields MDStatisticScope(~~TBD~~2457), MDStatisticSubScope(~~TBD~~2458) and MDStatisticScopeType(~~TBD~~2459) to define the entities

2.4 Calculation Interval

Statistics are typically calculated over a period of time by either aggregating information or by identifying maximum or minimum values. A special case is a calculation in real time which does not apply to all types of statistics and entities. The requirement is to identify a current value such as the best price in the market. The calculation is then not triggered by time but by a specific event, e.g. a new trade requiring the trade volume to be recalculated. This functionality is covered by and typical for the existing market data messages but should be included into the new messages for completeness.

It is required to have different types of intervals that may or may not need additional parameters.

The following enhancements are proposed:

- New fields MDStatisticIntervalType(~~TBD~~2464) and MDStatisticIntervalTypeUnit(~~TBD~~2465) to define the basic type of calculation interval
- New fields MDStatisticIntervalPeriod(~~TBD~~2466) and MDStatisticIntervalUnit(~~TBD~~2467) to define a~~n~~ time unit interval
- New fields MDStatisticStartDate(~~TBD~~2468) MDStatisticEndDate(~~TBD~~2469) to define a fixed date range
- New fields MDStatisticStartTime(~~TBD~~2470) MDStatisticEndTime(~~TBD~~2471) to define a fixed time range

2.4.1 Sliding Window

A sliding window is the most common type of interval to provide data on an ongoing basis whereby the source data stems from a single interval beginning in the past and ending with the time of the calculation of the statistic. In other words, this type of interval represents the last *n* time units, e.g. the last 10 seconds. An exception is required to intentionally defer publication but it must be possible to convey this information, i.e. how large the delay is (see Chapter *2.5 Dissemination Frequency*).

It is called *sliding* because these intervals may overlap with one another, depending on the frequency of their dissemination (see Chapter 2.5). For example, the highest trade price calculated over an interval of 10 seconds can be done so once a minute or once a second. The intervals and hence the source data only overlaps in the latter case where 9 seconds of the previous interval are identical to the current interval. It should be up to the designer of the statistics to determine whether overlapping of intervals makes most sense from a business point of view.

Choosing an interval that is longer than the dissemination frequency means that the calculation occurs according to that frequency, for example once a second the interval of the last 10 seconds is analyzed. Choosing an interval that is shorter than the dissemination frequency requires defining the exact behavior of the calculation in the rules of engagement.

2.4.2 Sliding Window Peak

It is required to be able to convey a peak value across multiple intervals, e.g. the highest number of trades across all 1 minute intervals of the current day. The sliding window peak works very similar to the sliding window but allows for the ability to define a date and/or time range in addition to the interval. Omission of the date/time range represents the current day. The end of the range may be defined in the past which requires defining the exact behavior of the calculation in the rules of engagement, i.e. if and how the intervals overlap. As the statistical value does not change over time in this case, the associated dissemination frequency merely expresses how often the same value is provided. It should also be possible to omit the frequency which represents a one-time dissemination.

The date/time range of a sliding window peak can be expressed as absolute values whenever actual statistical data has been calculated. It is also required to express relative date/time ranges as part of a generic definition of a statistic that is then provided on a regular basis, for example a statistic providing the sliding window peak of trading volume across 1 minute intervals of the previous day. For the combination of sliding window peaks with relative time units see Chapter *2.4.4 Relative Time Unit* and Chapter *2.4.5 Maximum Range*.

The requirements for the definition of absolute date/time ranges are described in Chapter *2.4.3 Fixed Date and Time Range*.

2.4.3 Fixed Date and Time Range

Fixed date and time ranges are required for a number of use cases. Historical data may be provided explicitly on a daily, weekly or monthly basis as a service, e.g. monthly trade volume for the last 10 years. Each message then needs to express a specific time unit together with the trade volume information. Another use case is a range that needs to span multiple time units, e.g. to express a range starting with the IPO of an instrument and ending with the current point in time. Hence, ranges need to be allowed to be open ended on either side.

A date and time range without starting information means that the range starts at the earliest point in time that the statistics provider has to offer. A date and time range without ending information means that the range goes up to the current point in time. It cannot go into the future as only actual data (no forecasts) is subject to this proposal, i.e. a range ending in the future is identical to the omission of ending information and represents the most current point in time available. The omission of both starting and ending information is a special case covered by its own interval type (see Chapter *2.4.5 Maximum Range*).

A range including dates can have two types of information related to time. The first type is associated with the starting or ending date and expresses a point in time on that date and reduces the range of the first and last date accordingly. The second type of time information is required to be able to define a time slice that applies to every date within the complete range, e.g. a statistic to provide information about a phase during the European afternoon when key figures are typically published in the US, allowing a comparison with “normal” days. If there is no date information then the time information only applies to the current business day.

It is required to be able to combine fixed date and time ranges with sliding window peaks (see Chapter *2.4.2 Sliding Window Peak*) by providing an interval period. This allows generically expressing statistics for a range that is calculated by identifying the peak value across all intervals within that range. The rules of engagement need to define if and how these intervals are overlapping, i.e. how exactly the statistic is calculated. This is not relevant for statistics showing high/low prices but does affect for example volume statistics.

2.4.4 Relative Time Unit

Relative time units are required in the context of unsolicited message flows initially providing only the definition of the statistics together with a unique identifier which is later used when reporting actual statistical values. For example, there might be a statistic for the highest bid of the current business day. The parameter definition would need to change every day with the actual date if there is no possibility to generically express this.

The current time unit has by definition not ended yet and need to be distinguished from the previous time unit which is complete. For example, monthly volumes of the previous month may be reported together with the volumes of the current month and recipients of such data can calculate the development of current volumes compared to last month.

Pre-defined time units should include current/previous second, minute, hour, day, week, month, quarter, year. It should be possible to define additional time units that are too specific for standardization. Note that relative time units should not be used to convey pre-defined trading sessions during the business day which is covered by the use of the attribute TradingSessionID(336), e.g. 3=Morning.

It is required to be able to combine relative time units with sliding window peaks (see Chapter *2.4.2 Sliding Window Peak*) in basically the same way as it is done for fixed ranges (see Chapter *2.4.3 Fixed Date and Time Range*).

It is required to be able to combine relative time units with fixed time ranges (see Chapter *2.4.3 Fixed Date and Time Range*) by providing start and/or end times. The use case is the ability to limit a relative time unit to a fixed time slice, e.g. to look at specific hours during the days of the previous month.

2.4.5 Maximum Range

Maximum ranges are required to express a relative range that does not start with a relative time unit and does not necessarily end with a previous time unit. It could also be called “system lifetime” or something similar to express the fact that it is an all-time value, e.g. all-time high or low. The maximum range implicitly goes up to the current time unit but may also need to end with a previous time unit. For example, one may want to compare the all-time high up to the previous year with the high reached so far for the current year.

It is required to be able to combine maximum ranges with sliding window peaks in basically the same way as it is done for fixed ranges (see Chapter *2.4.3 Fixed Date and Time Range*). A use case is for example to provide the peak monthly volume over the lifetime of an exchange. The maximum range then needs to be split into non-overlapping, monthly intervals.

2.5 Dissemination Frequency

Statistics can either be calculated on a regular basis based on sliding windows or sent out as one-time information. The latter applies to historical data which does not change anymore. Frequency information can be part of the definition of a statistic or specified as part of the rules of engagement, e.g. in cases where only actual data is provided and always together with the parameters defining it.

The frequency is defined as a number of time units such as milliseconds, seconds or days that need to elapse before the statistic is disseminated again. Depending on the interval type this can be a new value or also the same value, e.g. dissemination of the previous day trading volume every minute. It is required to also cover the special case of a dissemination in real-time, i.e. event driven and not time driven. A use case for this is for example the dissemination of high or low prices where the event occurs whenever a new high or low is established.

Note the difference between a real time calculation interval and a real time dissemination frequency. A statistic may be recalculated in real time based on an event but not disseminated in real time, e.g. to save bandwidth on a subset of available distribution channels. On the other hand, a statistic may be disseminated in real time but always calculated over a non-zero interval period, e.g. trade volume over the last 10 seconds provided every time a new trade occurs.

Publication of statistics may need to be deferred in accordance with regulatory requirements. A delay period in terms of a number of time units needs to be optionally available as an offset to know how long ago the statistic was actually calculated.

The following enhancements are proposed:

- New fields MDStatisticFrequencyPeriod(~~TBD~~2460) and MDStatisticFrequencyUnit(~~TBD~~2461) to identify the frequency
- New fields MDStatisticDelayPeriod(~~TBD~~2462) and MDStatisticDelayUnit(~~TBD~~2463) for deferred publication period

3 Issues and Discussion Points

4 Proposed Message Flow

The proposal is to add two new message types, **MarketDataStatisticsRequest**(35=~~tbd~~DO) and **MarketDataStatisticsReport**(35=~~tbd~~DP). The message flow can either be solicited or unsolicited.

- The solicited message flow starts with a single **MarketDataStatisticsRequest**(35=~~tbd~~DO) message followed by one or more **MarketDataStatisticsReport**(35=~~tbd~~DP) messages. The request establishes **MDStatisticID**(~~tbd~~2475) as a shortcut to a given set of parameters defined by the component <**MDStatisticParameters**>. **MDStatisticReqID**(~~tbd~~2452) is to be returned in the responses along with the actual statistics.

  Multiple response messages are either caused by a single large response that needs to be fragmented into multiple physical messages or by requesting a subscription which causes **MarketDataStatisticsReport**(35=~~tbd~~DP) messages to be sent throughout the remainder of the trading day or until the **MarketDataStatisticsRequest**(35=~~tbd~~DO) message is used to unsubscribe again.

- The unsolicited message flow only ~~contains~~consists of **MarketDataStatisticsReport**(35=~~tbd~~DP) messages. The same message can be used to convey the parameters as well as the actual statistics. In this case, the unsolicited message flow may start with reference data messages having the component <**MDStatisticParameters**> together with **MDStatisticID**(~~tbd~~2475) defining the parameter set but not ~~having~~ containing the field **MDStatisticValue**(~~tbd~~2478) to convey~~ing~~ actual statistics. **MDStatisticStatus**(~~tbd~~2477)**, MDStatisticValueType**(~~tbd~~2479)**,** and **MDStatisticValueUnit**(~~tbd~~2480) can be used as part of the parameter definition if the type and unit do not change for a given set of parameters identified by **MDStatisticID**(~~tbd~~2475). Subsequent messages ~~then~~would no longer have the component <**MDStatsParameters**> but only the field **MDStatisticID**(~~tbd~~2475) to identify the previously defined ~~a~~ set of parameters, the field **MDStatisticValue**(~~tbd~~2478) to convey the actual statistical value and optionally the fields **MDStatisticValueType**(~~tbd~~2479) and **MDStatisticValueUnit**(~~tbd~~2480).

  It is not recommended to send updates to a given set of parameters under the same **MDStatisticID**(~~tbd~~2475) with the exception of **MDStatisticStatus**(~~tbd~~2477) to indicate that a specific statistic is no longer provided. Changing parameters should be conveyed by setting the previous set of parameters to inactive (**MDStatisticStatus**(~~tbd~~2477)) and sending a new set of parameters under a new unique identifier **MDStatisticID**(~~tbd~~2475).

5 FIX message tables

5.1 MarketDataStatisticsRequest(35=tbdDO)

To be completed at the time of the proposal – all information provided will be stored in the repository	
Message Name	MarketDataStatisticsRequest
Message Abbreviated Name (for FIXML)	MDStatsReq
Category	MarketData
Action	_X_New __Change
Message Synopsis	The MarketDataStatisticsRequest(35=tbdDO) can beis used to ask request for statistical data. The simple form is to use an identifier (MDStatisticID(tbd2475)) assigned by the market place which would denotes a pre-defined statistical report. As an aAlternatively, or also in addition, one canthe request can provide define a number of parameters to define for the desired statistical information. The range can be restricted to a specific market, market segment or pre-defined security list for which a single set of statistics will be returned. It is also possible to specify individual instruments or group of instruments by means of the component blocks Instrument, UndInstrmtGrp and InstrmtLegGrp.
Message Elaboration	The resulting data set can be restricted to a specific market, market segment or pre-defined security list for which a single set of statistics will be returned. It is also possible to specify individual instruments or group of instruments by means of the component blocks Instrument, UndInstrmtGrp and InstrmtLegGrp. Fields specified in the request areis used as filter criteria to restrict the resulting data returned. [enter the message elaboration here]
To be finalized by FPL Technical Office	
(MsgType(tag 35) Enumeration	DO
Repository Component ID	151

Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*FIX Spec Comments*
	Standard Header	Y		New message type	MsgType = TBDDO
TBD 2452	MDStatisticReqID	Y	New		Unique message identifier for the request or the identifier of a previous request when unsubscribing.

Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*FIX Spec Comments*
263	SubscriptionRequestType	Y	Add		Used to subscribe / unsubscribe for market data statistics reports or to request a one-time snapshot of the current information. ~~If the field is absent, the default will be snapshot request only – no subscription.~~
Component Block <*Parties*>		N	Add		~~Insert here the set of "Parties" (firm identification) fields defined in "Common Components of Application Messages"~~
75	TradeDate	N	Add		Used to specify the business date.
1301	MarketID	N	Add		Used to specify a single market.
1300	MarketSegmentID	N	Add		Used to specify a single market segment.
1396	MarketSegmentDesc	N	Add		
1397	EncodedMktSegmDescLen	N	Add		Must be set if EncodedMktSegmDesc(1398) field is specified and must immediately precede it.
1398	EncodedMktSegmDesc	N	Add		Encoded (non-ASCII characters) representation of the MarketSegmentDesc(1396) field in the encoded format specified via the MessageEncoding(347) field.
1465	SecurityListID	N	Add		Used to reference an entire group of instruments for which a single set of statistics is to be calculated.
Component Block <*Instrument*>		N	Add		Used to specify an individual instrument ~~(or group)~~or instrument attributes for which a single set of statistics is to be calculated.
Component Block <*UndInstrmtGrp*>		N	Add		
Component Block <*InstrmtLegGrp*>		N	Add		
Component Block <*MDStatisticReqGrp*>		Y	New	New component block	Used to specify the parameters for the calculation of statistics.
60	TransactTime	N	Add		Time that the request was submitted.
58	Text	N	Add		

Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*FIX Spec Comments*
354	EncodedTextLen	N	Add		Must be set if EncodedText(355) field is specified and must immediately precede it.
355	EncodedText	N	Add		Encoded (non-ASCII characters) representation of the Text(58) field in the encoded format specified via the MessageEncoding(347) field.
	Standard Trailer	Y			

5.2 MarketDataStatisticsReport(35=DP)

To be completed at the time of the proposal – all information provided will be stored in the repository	
Message Name	MarketDataStatisticsReport
Message Abbreviated Name (for FIXML)	MDStatsRpt
Category	MarketData
Action	_X_New __Change
Message Synopsis	The MarketDataStatisticsReport(35=~~tbd~~DP) is used to provide unsolicited statistical information or in response to a specific request ~~or unsolicited~~. Each report contains a set of statistics for a single entity which could be a market, a market segment, a security list or an instrument.
Message Elaboration	[enter the message elaboration here]
To be finalized by FPL Technical Office	
(MsgType(tag 35) Enumeration	DP
Repository Component ID	152

Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*FIX Spec Comments*
	Standard Header	Y		New message type	MsgType = ~~TBD~~DP
Component Block <*ApplicationSequenceControl*>		N	Add		
~~TBD~~2453	MDStatisticRptID	Y	New		Unique message identifier for the report.
~~TBD~~2452	MDStatisticReqID	N	New		Unique message identifier for the request. Conditionally required if report is sent in response to a MarketDataStatisticsRequest(35=~~tbd~~DO) message.~~due to a request being submitted~~

Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*FIX Spec Comments*
~~TBD~~2473	MDStatisticRequestResult	N	New		Conditionally required if report is sent in response to a MarketDataStatisticsRequest(35=~~tbd~~DO) message.~~due to a request being submitted~~
325	UnsolicitedIndicator	N	Add		Set to 'Y' if message is sent as a result of a subscription request not a snapshot request
Component Block <*Parties*>		N	Add		~~Insert here the set of "Parties" (firm identification) fields defined in "Common Components of Application Messages"~~
75	TradeDate	N	Add		
1301	MarketID	N	Add		
1300	MarketSegmentID	N	Add		
1396	MarketSegmentDesc	N	Add		
1397	EncodedMktSegmDescLen	N	Add		Must be set if EncodedMktSegmDesc(1398) field is specified and must immediately precede it.
1398	EncodedMktSegmDesc	N	Add		Encoded (non-ASCII characters) representation of the MarketDesgmentDesc(1396) field in the encoded format specified via the MessageEncoding(347) field.
1465	SecurityListID	N	Add		
Component Block <*Instrument*>		N	Add		
Component Block <*UndInstrmtGrp*>		N	Add		
Component Block <*InstrmtLegGrp*>		N	Add		
Component Block <*MDStatisticRptGrp*>		Y	New	New component block	Parameters and result information.
60	TransactTime	N	Add		Time that the report was provided.
58	Text	N	Add		
354	EncodedTextLen	N	Add		Must be set if EncodedText(355) field is specified and must immediately precede it.
355	EncodedText	N	Add		Encoded (non-ASCII characters) representation of the Text(58) field in the encoded format specified via the MessageEncoding(347) field.
	Standard Trailer	Y			

6 FIX component blocks

6.1 MDStatisticReqGrp

To be completed at the time of the proposal – all information provided will be included in the repository	
Component Name	MDStatisticsReqGrp
Component Abbreviated Name (for FIXML)	Req
Component Type	_X__ Block Repeating ___ Block
Category	MarketData
Action	_X_New __Change
Component Synopsis	This component block is used within the MarketDataStatisticsRequest(35=~~tbd~~DO) message to define a set of parameters describing the desired statistics.
Component Elaboration	[enter the component elaboration here]
To be finalized by FPL Technical Office	
Repository Component ID	2248

<*Component block MDStatisticReqGrp*>					
Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*Comments*
~~TBD~~2474	NoMDStatistics	~~Y~~N	New		
~~———~~	~~Component Block <MDStatsParameters>~~	~~———~~	~~New~~	~~New component block~~	~~———~~
→	~~TBD~~ 2475 MDStatisticID	~~Y~~N	New		Required if NoMDStatistics(~~tbd~~2474) > 0. Unique statistics identifier ~~can be~~ used as a placeholder for a set of parameters. If an ID is not applicable use "[N/A]".
→	Component Block <*MDStatisticParameters*>	N	New	New component block	Required if NoMDStatistics(~~tbd~~2474) > 0 and MDStatisticID(~~tbd~~2475) = "[N/A]".
</*Component block MDStatisticReqGrp*>					

6.2 MDStatisticRptGrp

To be completed at the time of the proposal – all information provided will be included in the repository	
Component Name	MDStatisticRptGrp
Component Abbreviated Name (for FIXML)	StatsRpts
Component Type	_X__ Block Repeating ___ Block
Category	MarketData
Action	_X_New __Change
Component Synopsis	This component block is used within the MarketDataStatisticsReport(35=~~tbd~~DP) message to provide results together with the related set of parameters.
Component Elaboration	[enter the component elaboration here]
To be finalized by FPL Technical Office	
Repository Component ID	2249

<Component block MDStatisticRptGrp>						
Tag	*Field Name*		*Req'd*	*Action*	*Mappings and Usage Comments*	*Comments*
~~TBD~~2474	NoMDStatistics		~~Y~~N	New		
→	Component Block <*MDStatisticParameters*>		~~Y~~N	New	New component block	Required if NoMDStatistics(~~tbd~~2474) > 0.
→	~~TBD~~ 2475	MDStatisticID	~~Y~~N	New		Required if NoMDStatistics(2474~~tbd~~) > 0.~~Unique statistics identifier~~
→	~~TBD~~ 2476	MDStatisticTime	~~Y~~N	New		Required if NoMDStatistics(2474~~tbd~~) > 0.~~Time of calculation of the statistic~~
→	~~TBD~~ 2477	MDStatisticStatus	~~Y~~N	New		Required if NoMDStatistics(2474~~tbd~~) > 0.~~Status for the statistic~~
→	~~TBD~~ 2478	MDStatisticValue	N	New		Calculated statistic value. Conditionally required unless sending reference data only to establish MDStatisticID(~~tbd~~2475) as a shortcut to a set parameters given by the ~~<~~MDStatsParameters component~~>~~.
→	~~TBD~~ 2479	MDStatisticValueType	N	New		~~Format of calculated value~~

→	~~TBD~~ 2480	MDStatisticValueUnit	N	New		~~Unit for time durations~~
</Component block MDStatisticRptGrp>						

6.3 MDStatisticParameters

To be completed at the time of the proposal – all information provided will be included in the repository	
Component Name	MDStatisticParameters
Component Abbreviated Name (for FIXML)	StatsPrm
Component Type	___ Block Repeating _X__ Block
Category	MarketData
Action	_X_New __Change
Component Synopsis	This component ~~block~~ comprises all parameters that can be used to describe the market data statistics. These can be part of the request as well as the response. All parameters defined on the MarketDataStatisticsRequest(35=~~tbd~~DO) message should be echoed in the MarketDataStatisticsReport(35=~~tbd~~DP) message as the latter could also be sent unsolicited. The general category and the entities involved in the statistics are defined by MDStatisticType(~~tbd~~2456), MDStatisticScope(~~tbd~~2458), and MDStatisticIntervalType(~~tbd~~2464) and must always be specified. The remaining fields are optional and restrict the data range in one way or another. The time range for the data can either be specified in terms of an interval for which the statistics are typically calculated on a regular basis or in terms of an absolute date and/or time range.
Component Elaboration	[enter the component elaboration here]
To be finalized by FPL Technical Office	
Repository Component ID	2250

<Component block MDStatisticParameters >					
Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*Comments*
~~TBD~~2456	MDStatisticType	Y	New		~~Used to define what is being calculated.~~
~~TBD~~2457	MDStatisticScope	Y	New		~~Used to define which entity is used as a basis for the calculation.~~
~~TBD~~2458	MDStatisticSubScope	N	New		~~Can be used to reduce the entities in scope.~~
~~TBD~~2459	MDStatisticScopeType	N	New		~~Can be used to reduce the events of the entities in scope.~~
~~TBD~~2454	MDStatisticName~~Symbol~~	N	New		

<*Component block MDStatisticParameters* >					
Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*Comments*
~~TBD~~2455	MDStatisticDesc	N	New		
~~TBD~~2481	EncodedMDStatisticDescLen	N	New		Must be set if EncodedMDStatisticDesc(~~TBD~~2482) field is specified and must immediately precede it.
~~TBD~~2482	EncodedMDStatisticDesc	N	New		Encoded (non-ASCII characters) representation of the MDStatisticDesc(2455) field in the encoded format specified via the MessageEncoding(347) field.
264	MarketDepth	N	Add		May be used to specify the market depth~~Data~~ up to specified ~~depth~~ level.
~~TBD~~2460	MDStatisticFrequencyPeriod	N	New		Conditionally required ~~if~~when MDStatisticFrequencyUnit(~~TBD~~2461) is specified. Omission represents a one-time dissemination.
~~TBD~~2461	MDStatisticFrequencyUnit	N	New		Conditionally required when MDStatisticFrequencyPeriod(~~TBD~~2460) is specified.
~~TBD~~2462	MDStatisticDelayPeriod	N	New		~~Can be use to defer publication.~~ Conditionally required when~~if~~ MDStatisticDelayUnit(~~TBD~~2463) is specified.
~~TBD~~2463	MDStatisticDelayUnit	N	New		Conditionally required when MDStatisticDelayPeriod(~~TBD~~2462) is specified.
~~TBD~~2464	MDStatisticIntervalType	Y	New		~~Use to distinguish a sliding window from a fixed date and/or time range.~~
~~TBD~~2465	MDStatisticIntervalTypeUnit	N	New		Conditionally required for MDStatisticIntervalType (~~TBD~~2464) = 1 (Sliding window) or 2 (Sliding window peak).
~~TBD~~2466	MDStatisticIntervalPeriod	N	New		Conditionally required ~~if~~when MDStatisticIntervalUnit(~~TBD~~2467) is specified.
~~TBD~~2467	MDStatisticIntervalUnit	N	New		Conditionally required when MDStatisticIntervalPeriod(~~TBD~~2466) is specified and MDStatisticIntervalType(~~tbd~~2464) = 5(Current time unit), 6(Previous time unit) or 8(Maximum range up to previous time unit).

<*Component block MDStatisticParameters* >					
Tag	*Field Name*	*Req'd*	*Action*	*Mappings and Usage Comments*	*Comments*
~~TBD~~2468	MDStatisticStartDate	N	New		~~First day of data range.~~ Can be used to define a date range for a sliding window peak other than the current day. Omission represents a date range starting with the first available day.
~~TBD~~2469	MDStatisticEndDate	N	New		~~Last day of data range.~~ Can be used to define a date range for a sliding window peak other than the current day. Omission represents a date range including the current day.
~~TBD~~2470	MDStatisticStartTime	N	New		~~Begin of data range.~~ Can be used to define a time range for a sliding window peak other than the complete day. Omission represents a time range starting at midnight.
~~TBD~~2471	MDStatisticEndTime	N	New		~~End of data range.~~ Can be used to define a time range for a sliding window peak other than the complete day. Omission represents a time range ending with the time of dissemination of the statistical data.
~~TBD~~2472	MDStatisticRatioType	N	New		~~Ratios between various entities.~~ Conditionally required ~~for~~ when MDStatisticType(~~TBD~~2456) = 5~~=~~(Ratio).
1815	TradingCapacity	N	Add		
40	OrdType	N	Add		
59	TimeInForce	N	Add		
276	QuoteCondition	N	Add		
277	TradeCondition	N	Add		
54	Side	N	Add		
578	TradeInputSource	N	Add		
336	TradingSessionID	N	Add		
625	TradingSessionSubID	N	Add		
</*Component block MDStatisticParameters*>					

Appendix A – Data Dictionary

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
~~TBD~~2452	MDStatisticReqID	Add	String	Message identifier for a statistics request.	@ReqID	Add to messages MarketDataStatisticsRequest and MarketDataStatisticsReport
~~TBD~~2453	MDStatisticRptID	Add	String	Message identifier for a statistics report.	@RptID	Add to message MarketDataStatisticsReport
~~TBD~~2454	MDStatisticName~~Symbol~~	Add	String	The short name or ~~A~~acronym for a set of statistic parameters.	@StatsNme~~Sym~~	Add to component MDStatisticParameters
~~TBD~~2455	MDStatisticDesc	Add	String	Can be used to provide an optional textual description for a statistic.	@Desc	Add to component MDStatisticParameters
~~TBD~~	~~EncodedMDStatisticLen~~	~~Add~~	~~Length~~	~~Byte length of encoded (non-ASCII characters) EncodedMDStatisticDesc(TBD) field.~~	~~@EncDescLen~~	
~~TBD~~	~~EncodedMDStatistic~~	~~Add~~	~~data~~	~~Encoded (non-ASCII characters) representation of the MDStatisticDesc(2455) field in the encoded format specified via the MessageEncoding (347) field. If used, the ASCII (English) representation should also be specified in the MDStatisticDesc(2455) field.~~	~~@EncDesc~~	
~~TBD~~2456	MDStatisticType	Add	Int	Type of statistic value. Valid Values: 1 – Count [Elaboration: Simple count of entities or events, e.g. orders transactions during a period of time.] 2 – Average volume [Elaboration: Average quantity of entities, e.g. average size of incoming quotes or average trade size.] 3 – Total volume [Elaboration: Aggregated volume of entities	@Typ	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				across events, e.g. total trade volume during a period of time.] 4 – Distribution [Elaboration: Distribution of entities across entity types, e.g. percentage of limit orders amongst all order types.] 5 – Ratio [Elaboration: Pre-defined ratio between entities, e.g. ratio of trades triggered by buy orders.] 6 – Liquidity [Elaboration: Measurement of liquidity of an instrument, e.g. by providing the spread between bid and offer or the trade volume needed to move the price.] 7 – Volume weighted average price(VWAP)~~WAP~~ [Elaboration: Benchmark price.] 8 – Volatility [Elaboration: Volatility of entities, e.g. price movements of incoming orders.] 9 – Duration [Elaboration: Time period of events, e.g. resting period of passive orders.] 10 – Tick [Elaboration: Price movement of an instrument in number of ticks.] 11 – Average turnover [Elaboration: Average volume multiplied by price.] 12 – Total turnover [Elaboration: Aggregated volume multiplied by price.] 13 – High [Elaboration: Highest price.]		

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				14 – Low [Elaboration: Lowest price.] 15 – Midpoint [Elaboration: Midpoint price between bid and offer.] 16 – First [Elaboration: First price or initial value.] 17 – Last [Elaboration: Most recent price or value.] 18 – Final [Elaboration: Final price or confirmed value.] 19 – Exchange best [Elaboration: Best price of a single venue regardless of volume.] 20 – Exchange best with volume [Elaboration: Best price of a single venue with volume at or above a pre-defined threshold.] 21 – Consolidated best [Elaboration: Best price across multiple venues regardless of volume.] 22 – Consolidated best with volume [Elaboration: Best price across multiple venues with volume at or above a pre-defined threshold.] 23 – Time weighted average price (TWAP) ~~[Elaboration: Time weighted average price.]~~ Values “100” and above are reserved for bilaterally agreed upon user defined enumerations.		
~~TBD~~24 57	MDStatisticScope	Add	Int	Entities used as basis for the statistics. Valid Values: 1 – Bid prices	@Scp	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				2 – Offer prices 3 – Bid depth 4 – Offer depth 5 – Orders 6 – Quotes 7 – Orders and Quotes 8 – Trades 9 – Trade prices 10 – Auction prices 11 – Opening prices 12 – Closing prices 13 – Settlement prices 14 – Underlying prices 15 – Open interest 16 – Index values 17 – Margin rates Values “100” and above are reserved for bilaterally agreed upon user defined enumerations.		

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
~~TBD~~2458	MDStatisticSubScope	Add	Int	Sub-scope of the statistics to further reduce the entities used as basis for the statistics. Valid Values: 1 – Visible [Elaboration: Only includes visible orders and/or quotes.] 2 – Hidden [Elaboration: Only includes hidden orders and/or quotes.] 3 – Indicative [Elaboration: Only includes IOIs and non-tradable quotes.] 4 – Tradeable [Elaboration: Excludes IOIs and indicative quotes.] 5 – Passive [Elaboration: Only includes resting orders and tradeable quotes.] 6 – Market consensus [Elaboration: Only includes entities, e.g. trades, conforming to minimum requirements. Details to be defined out of band.] Values “100” and above are reserved for bilaterally agreed upon user defined enumerations.	@SubScp	Add to component MDStatisticParameters
~~TBD~~2459	MDStatisticScopeType	Add	Int	Scope details of the statistics to reduce the number of events being used as basis for the statistics. Valid Values:	@ScpTyp	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				1 – Entry rate 2 – Modification rate 3 – Cancel rate 4 – Downward move 5 – Upward move Values “100” and above are reserved for bilaterally agreed upon user defined enumerations.		
~~TBD~~2460	MDStatisticFrequencyPeriod	Add	Int	Dissemination frequency of statistics. Special meaning for a value of zero which represents an event-driven dissemination in real time (e.g. as soon as a new trade occurs).	@FreqPeriod	Add to component MDStatisticParameters
~~TBD~~2461	MDStatisticFrequencyUnit	Add	Int	Time unit for MDStatisticFrequencyPeriod ~~MDStatFrequencyPeriod~~ (~~TBD~~2460). [Uses enums from 1429]	@FreqUnit	Add to component MDStatisticParameters
~~TBD~~2462	MDStatisticDelayPeriod	Add	Int	Number of time units between the calculation of the statistic and its dissemination. Can be used to defer or delay publication.	@DelayPeriod	Add to component MDStatisticParameters
~~TBD~~2463	MDStatisticDelayUnit	Add	Int	Time unit for MDStatisticDelayPeriod ~~MDStatDelayPeriod~~ (~~TBD~~2462). [Uses enums from 1429]	@DelayUnit	Add to component MDStatisticParameters
~~TBD~~2464	MDStatisticIntervalType	Add	Int	Type of interval over which statistic is calculated. Valid values: 1 – Sliding window	@IntvlTyp	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				[Elaboration: Window is defined as an interval period up to the current time of dissemination, see MDStatisticIntervalPeriod ~~MDStatIntervalPeriod~~(~~TBD~~2466).] 2 – Sliding window peak [Elaboration: Highest value of all sliding windows across date and/or time range. Omission of date/time range represents current day.] 3 – Fixed date range [Elaboration: Interval may be open ended on either side, see MDStatisticStartDate ~~MDStatStartDate~~(~~TBD~~2468) and MDStatisticEndDate(~~TBD~~2469). Starting/ending time of date fields only apply to the first/last day of the date range. Additional time range may be defined with MDStatisticStartTime(~~TBD~~2470) and MDStatisticEndTime(~~TBD~~2471) and applies to every business day within date range, i.e. to define an identical time slice across days.] 4 – Fixed time range [Elaboration: Interval may be open ended on either side, see MDStatisticStartTime(~~TBD~~2470) and MDStatisticEndTime(~~TBD~~2471).] 5 – Current time unit [Elaboration: Relative time unit which has not ended yet, e.g. current day. Interval ends with the time of dissemination of the statistic. Requires the definition of an actual unit, see MDStatisticIntervalTypeUnit(~~TBD~~2465).] 6 – Previous time unit [Elaboration: Relative time unit which has ended in the past. Requires the definition of an		

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				actual unit, see MDStatisticIntervalTypeUnit(~~TBD~~2465).] 7 – Maximum range [Elaboration: Use to convey record values over the lifetime of the system or venue.] 8 – Maximum range up to previous time unit [Elaboration: Use to convey record values over the lifetime of the system or venue but does not include the most recent time unit as it has not completed yet. Requires the definition of an actual unit, see MDStatisticIntervalTypeUnit(~~TBD~~2465)]		
~~TBD~~2465	MDStatisticIntervalTypeUnit	Add	String	Time unit for MDStatisticIntervalType (~~TBD~~2464). ~~Conditionally required for MDStatIntervalType (TBD) = 5, 6 and 8.~~ ~~Valid values:~~ ~~H = Hour~~ ~~Min = Minute~~ ~~S = Second~~ ~~D = Day~~ ~~Wk = Week~~ ~~Mo = Month~~ ~~Q = Quarter~~ ~~Ye = Year~~ *(Uses enum from ~~Time~~OrderDelayUnit(1429~~997~~)*	@IntvlTypUnit	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
~~TBD~~2466	MDStatisticIntervalPeriod	Add	Int	Length of time over which the statistic is calculated. Special meaning for a value of zero to express that there is no aggregation over time. ~~Conditionally required for MDStatIntervalType (TBD) = 1 or 2.~~ Can be used with other interval types expressing relative date and time ranges to combine them with sliding window peaks, e.g. highest volume across 1 minute intervals of the previous day.	@IntvlPeriod	Add to component MDStatisticParameters
~~TBD~~2467	MDStatisticIntervalUnit	Add	Int	Time unit for MDStatisticIntervalPeriod (2466~~TBD~~). [Uses enums from OrderDelayUnit(1429)]	@IntvlUnit	Add to component MDStatisticParameters
~~TBD~~2468	MDStatisticStartDate	Add	UTCTimestamp	First day of range for which statistical data is collected	@StartDt	Add to component MDStatisticParameters
~~TBD~~2469	MDStatisticEndDate	Add	UTCTimestamp	Last day of range for which statistical data is collected.	@EndDt	Add to component MDStatisticParameters
~~TBD~~2470	MDStatisticStartTime	Add	UTCTimeOnly	Start time of the time range for which statistical data is collected.	@StartTm	Add to component MDStatisticParameters
~~TBD~~2471	MDStatisticEndTime	Add	UTCTimeOnly	End time of the time range for which statistical data is collected.	@EndTm	Add to component MDStatisticParameters

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
~~TBD~~2472	MDStatisticRatioType	Add	Int	Ratios between various entities. ~~Conditionally required for MDStatType 5 – Ratio.~~ Valid Values: 1 – Buyers to sellers 2 – Upticks to downticks [Elaboration: Can also be used with a scope of multiple instruments representing an index.] 3 – Market maker to non-market maker [Elaboration: Use to identify share of market making activity.] 4 – Automated to non-automated [Elaboration: Use to identify ratio of orders and quotes resulting from automated trading.] 5 – Orders to trades [Elaboration: Use with scope of trades.] 6 – Quotes to trades [Elaboration: Use with scope of trades.] 7 – Orders and quotes to trades [Elaboration: Use with scope of trades.]	@RatioTyp	Add to component MDStatisticParameters
~~TBD~~2473	MDStatisticRequestResult	Add	Int	Result returned in response to MarketDataStatisticsRequest (35=~~TBD~~DO). Valid Values: 0 – Successful (default) 1 – Invalid or unknown market 2 – Invalid or unknown market segment 3 – Invalid or unknown security list 4 – Invalid or unknown instrument(s) 5 – Invalid parties 6 – Trade date out of supported range 7 – Statistic type not supported	@ReqRslt	Add to message MarketDataStatisticsReport

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				8 – Scope or sub-scope not supported 9 – Scope type not supported 10 – Market depth not supported 11 – Frequency not supported 12 – Statistic interval not supported 13 – Statistic date range not supported 14 – Statistic time range not supported 15 – Ratio type not supported 16 – Invalid or unknown trade input source 17 – Invalid or unknown trading session 18 – Unauthorized for statistic request 99 – Other (further information in Text (58) field) Values “100” and above are reserved for bilaterally agreed upon user defined enumerations.		
~~TBD~~2474	NoMDStatistics	Add	NumInGrp	Number of market data statistics.	N/A	Add to components MDStatisticReqGrp and MDStatisticRptGrp
~~TBD~~2475	MDStatisticID	Add	String	Unique identifier for a statistic.	@StatsID	Add to components MDStatisticReqGrp and MDStatisticRptGrp
~~TBD~~2476	MDStatisticTime	Add	UTCTimestamp	Time of calculation of a statistic.	@Tm	Add to component MDStatisticRptGrp
~~TBD~~2477	MDStatisticStatus	Add	Int	Status for a statistic to indicate its availability. Valid Values: 1 – Active (default) 2 – Inactive (not disseminated)	@Stat	Add to component MDStatisticRptGrp
~~TBD~~2478	MDStatisticValue	Add	Float	Statistical value.	@Val	Add to component MDStatisticRptGrp

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
~~TBD~~2479	MDStatisticValueType	Add	Int	Type of statistical value. Valid Values: 1 – Absolute 2 – Percentage	@Typ	Add to component MDStatisticRptGrp
~~TBD~~2480	MDStatisticValueUnit	Add	String	Unit of time for statistical value. [Uses enums from 1429]	@ValUnit	Add to component MDStatisticRptGrp
2481	EncodedMDStatisticDescLen	Add	Length	Byte length of encoded (non-ASCII characters) EncodedMDStatisticDesc(2482) field.	@EncDescLen	
2482	EncodedMDStatisticDesc	Add	data	Encoded (non-ASCII characters) representation of the MDStatisticDesc(2455) field in the encoded format specified via the MessageEncoding (347) field. If used, the ASCII (English) representation should also be specified in the MDStatisticDesc(2455) field.	@EncDesc	
997	TimeUnit	Change	String	*Add new enumeration:* H = Hour Min = Minute … Q = Quarter		

Appendix B – Glossary Entries

Term	Definition	Field where used

Appendix C – Abbreviations

Term	Proposed Abbreviation	Proposed Messages, Components, Fields where used
Linkage	Lnkg	LinkageHandlingIndicator(~~TBD~~2448)
Statistics	Stats	StatsType(1176)
Ratio	Ratio	

Appendix D – Usage Examples

Bid and Offer Statistics

Statistic	**<MDStatisticParameters>**
Current best bid, published every second.	MDStatisticType = 19 (Exchange best) MDStatisticScope = 1 (Bid prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time
Highest bid of the current day, published in real time, i.e. every time there is a new high.	MDStatisticType = 13 (High) MDStatisticScope = 1 (Bid prices) MDStatisticFrequencyPeriod = 0, i.e. real time MDStatisticIntervalType = 5 (Current time unit) MDStatisticIntervalTypeUnit = D (Day)
Opening bid of current day, published every hour.	MDStatisticType = 16 (First) MDStatisticScope = 1 (Bid prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 11 (Hours) MDStatisticIntervalType = 5 (Current time unit) MDStatisticIntervalTypeUnit = D (Day)

Order and Quote Statistics

Statistic	**<MDStatisticParameters>**
Number of buy IOC orders entered every minute, published every second.	MDStatisticType = 1 (Count) MDStatisticScope = 5 (Orders), MDStatisticScopeType = 1 (Entry Rate) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 60, MDStatisticIntervalUnit = 0 (Seconds) Side = 1 (Buy), TimeInForce = 3 (IOC)
Cancel rate of orders per second, published every millisecond.	MDStatisticType = 1 (Count) MDStatisticScope = 5 (Orders), MDStatisticScopeType = 3 (Cancel Rate) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 3 (Milliseconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 0 (Seconds)
Highest number of quotes at the top of the market across all 10 second intervals of the current day, published every minute.	MDStatisticType = 1 (Count) MDStatisticScope = 7 (Order and Quotes) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 2 (Sliding window peak) MDStatisticIntervalPeriod = 10, MDStatisticIntervalUnit = 0 (Seconds) MarketDepth = 1, i.e. top of book
Quote volume of market makers entered over 5 minutes, published every 30 seconds.	MDStatisticType = 3 (Total Volume) MDStatisticScope = 6 (Quotes), MDStatisticScopeType = 1 (Entry Rate) MDStatisticFrequencyPeriod = 30, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 5, MDStatisticIntervalUnit = 10 (Minutes)

Statistic	**<MDStatisticParameters>**
	TradingCapacity = 6 (Market Maker)
Current hidden order volume, published in real time, i.e. every time the hidden volume changes.	MDStatisticType = 3 (Total Volume) MDStatisticScope = 5 (Orders), MDStatisticSubScope = 2 (Hidden) MDStatisticFrequencyPeriod = 0, MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time
Current aggregated quantity of GTC orders up to depth 5 on the offer side, published every second.	MDStatisticType = 3 (Total Volume) MDStatisticScope = 5 (Orders) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time MarketDepth = 5, TimeInForce = 1 (GTC)
Volatility of visible sell order and quote offer sizes over 5 minute periods, published every second.	MDStatisticType = 8 (Volatility) MDStatisticScope = 7 (Orders and Quotes), MDStatisticSubScope = 1 (Orderbook) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 5, MDStatisticIntervalUnit = 10 (Minutes) Side = 2 (Sell)
Current percentage of market orders, published every minute.	MDStatisticType = 4 (Distribution) MDStatisticScope = 5 (Orders) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time OrdType = 1 (Market)
Current number of price levels on the bid side, published every second.	MDStatisticType = 1 (Count) MDStatisticScope = 3 (Bid depth) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time

Trade Statistics

Statistic	**<MDStatisticParameters>**
Highest trading price of the current day, published in real time, i.e. whenever a new high is established.	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 0, i.e. in real time MDStatisticIntervalType = 5 (Current time unit) MDStatisticIntervalTypeUnit = D (Day)
Yesterday's highest trading price, published every minute.	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 6 (Previous time unit) MDStatisticIntervalTypeUnit = D (Day)
Highest trade price (offer paid) seen during the last 10 seconds,	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 5, MDStatisticFrequencyUnit = 0 (Seconds)

Statistic	**<MDStatisticParameters>**
published every 5 seconds.	MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 10, MDStatisticIntervalUnit = 0 (Seconds)
Highest trade price ever seen, published once a day.	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 7 (Maximum range)
Trade volume per hour, published every 15 minutes.	MDStatisticType = 3 (Total Volume) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 15, MDStatisticFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 11 (Hours)
Number of trades across 1 minute intervals, published every minute.	MDStatisticType = 1 (Count) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 10 (Minutes)
Aggregated number of trades during the current day, published once a minute.	MDStatisticType = 1 (Count) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 1, MDStaistictFrequencyUnit = 10 (Minutes) MDStatisticIntervalType = 5 (Current time unit) MDStatisticIntervalTypeUnit = D (Day)
Aggregated number of trades up to the previous day, published once a day.	MDStatisticType = 1 (Count) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 8 (Maximum range up to previous time unit) MDStatisticIntervalTypeUnit = D (Day)
Highest number of trades ever done on a single day, published once a day.	MDStatisticType = 1 (Count) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 2 (Sliding window peak) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 12 (Days) MDStatisticEndDate = YYYYMMDD-23:59:59.999, i.e. set to current day
Highest number of trades done on a single day in a specific date range, published once a day.	MDStatisticType = 1 (Count) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 2 (Sliding window peak) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 12 (Days) MDStatisticStartDate = YYYYMMDD-00:00:00.000 MDStatisticEndDate = YYYYMMDD-23:59:59.999

Special Price and Volume Statistics

Statistic	**<MDStatisticParameters>**
Previous day's closing price.	MDStatisticType = 18 (Final) MDStatisticScope = 12 (Closing prices) MDStatisticIntervalType = 6 (Previous time unit) MDStatisticIntervalTypeUnit = D (Day)

Statistic	<MDStatisticParameters>
Current open interest.	MDStatisticType = 3 (Total Volume) MDStatisticScope = 15 (Open interest) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time
Lowest auction price on a weekly basis, published once a day.	MDStatisticType = 14 (Low) MDStatisticScope = 10 (Auction prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 13 (Weeks) TradingSessionID = 1 (Day) TradingSessionSubID = 8 (Any auction)
VWAP of customer trades over a 10 minute period, published whenever there is a new trade.	MDStatisticType = 7 (VWAP) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 0, i.e. real time MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 10, MDStatisticIntervalUnit = 10 (Minutes) TradingCapacity = 1 (Customer)

Miscellaneous Statistics

Statistic	<MDStatisticParameters>
Highest bid during opening auction on a weekly basis, published once a day.	MDStatisticType = 13 (High) MDStatisticScope = 1 (Bid prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 1, MDStatisticIntervalUnit = 13 (Weeks) TradingSessionID = 1 (Day), TradingSessionSubID = 2 (Opening auction)
Current ratio of instruments ticking up compared to instruments ticking down, published in real time.	MDStatisticType = 5 (Ratio) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 0 MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 0, i.e. real time MDStatisticRatioType = 2 (Upticks to downticks)
Ratio of trades triggered by buy orders compared to overall trades in the last 30 seconds, published in real time.	MDStatisticType = 5 (Ratio) MDStatisticScope = 8 (Trades) MDStatisticFrequencyPeriod = 0 MDStatisticIntervalType = 1 (Sliding window) MDStatisticIntervalPeriod = 30, MDStatisticIntervalUnit = 0 (Seconds) MDStatisticRatioType = 1 (Buyers to sellers)
Deferred publication of highest trade price of current day (by 1 minute), published every second.	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 0 (Seconds) MDStatisticDelayPeriod = 1, MDStatisticDelayUnit = 10 (Minutes) MDStatisticIntervalType = 5 (Current time unit) MDStatisticIntervalTypeUnit = D (Day)

Statistic	**<MDStatisticParameters>**
Highest trade price from 9am-10am for current month, published daily.	MDStatisticType = 13 (High) MDStatisticScope = 9 (Trade prices) MDStatisticFrequencyPeriod = 1, MDStatisticFrequencyUnit = 12 (Days) MDStatisticIntervalType = 6 (Previous time unit) MDStatisticIntervalTypeUnit = Mo (Month) MDStatisticStartTime = 09:00:00, MDStatisticEndTime = 09:59:59