S&P Capital IQ Real-Time Solutions

QuantFEED® Developer's Notice

NASDAQ TOTALVIEW – Feed Update

Reference n°: 18578 – 20140429

Effective as of: 19 May 2014

Action required from users: MANDATORY ACTION

S&P CAPITAL IQ
McGRAW HILL FINANCIAL

S&P Capital IQ Real-Time Solutions (QuantHouse®) – QuantFEED®
QuantFEED® Developer's Notice
Reference 18578 – 20140429
April 29, 2014

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UPDATE OF THE NASDAQ TOTALVIEW MARKET DATA STREAM

To reflect the changes caused by the dissemination of new values on the NASDAQ TOTALVIEW market data stream, S&P Capital IQ Real-Time Solutions has decided to enhance the content of QuantFEED®.

This developer's notice contains late-breaking information about the implementation of this modification in your applications, which may not be included otherwise in the published documentation. The topics this notice covers include:

1. Update Summary

Table 1 Current update summary

Notice Reference	18578 – 20140429
Exchanges	NASDAQ TOTALVIEW
Concerned MICs	XNAS
Internal Source ID	63
Effective Date	**2014-05-19**
Impact	• Update of the Referential Tags • Update of the Quotation Tags • Update of the Quotation Context Tags • Update of the Trading Status Kinematics
Action required	**MANDATORY ACTION** – see section 2.4. Update of the Trading Status Kinematics.

2. Functional Description

Effective Monday, **May 19, 2014**, S&P Capital IQ Real-Time Solutions enhances the content of the referential, quotation, quotation context data and the Trading Status Kinematics to accommodate the new information disseminated on the NASDAQ TOTALVIEW market data stream, as described below:

- 2.1. Changes to the Referential Data

- 2.2. Changes to the Quotation Data
- 2.3. Changes to the Quotation Context Data
- 2.4. Update of the Trading Status Kinematics.

2.1. Changes to the Referential Data

S&P Capital IQ Real-Time Solutions **introduces** the referential tags below to accommodate the information broadcast on the NASDAQ TOTALVIEW market data stream:

Table 2 Referential tags added on the NASDAQ TOTALVIEW market data stream

Tag Name	Numeric ID	Type
OperatingMIC	9533	String
SegmentMIC	9534	String

Below is an example of the current implementation of the newly added (in `green`) referential tags:

```
instr # 330/30659 = 692090819
    PriceCurrency                string{USD}
    Symbol                       string{NYMT}
    Description                  string{New York Mortgage Trust, Inc. - Common Stock}
    SecurityType                 string{CS}
    FOSMarketId                  XNAS
    CFICode                      string{ESXXXX}
    RoundLot                     float64{100}
    InternalCreationDate         Timestamp{2010-06-17 05:32:09:984}
    InternalModificationDate     Timestamp{2014-02-24 10:00:03:440}
    InternalSourceId             uint16{63}
    LocalCodeStr                 string{NYMT}
    PriceIncrement_dynamic_TableId      uint32{4128868}
    OperatingMIC                 string{XNAS}
    SegmentMIC                   string{XNGS}
```

2.2. Changes to the Quotation Data

S&P Capital IQ Real-Time Solutions **introduces** the quotation tags below to accommodate the information broadcast on the NASDAQ TOTALVIEW market data stream:

Table 3 Quotation tags added on the NASDAQ TOTALVIEW market data stream

Tag Name	Numeric ID	Type
DailyHighPrice	9134	Float64
DailyLowPrice	9135	Float64
RetailPriceImprovement	9364	Char

Below is an example of the current implementation of the newly added (in green) quotation tags:

```
InstrumentStatusL1
-- 330/30659
        BID: 7.48       1807    @12
        ASK: 7.49       1710    @7
        LastPrice                       float64{7.49}
        LastTradeQty                    float64{513}
        DailyHighPrice                  float64{7.77}
        DailyLowPrice                   float64{7.35}
        DailyTotalVolumeTraded          float64{32627}
        DailyTotalAssetTraded           float64{244356.82}
        LastTradePrice                  float64{7.49}
        LastTradeTimestamp              Timestamp{2014-05-22 16:37:45:322}
        InternalDailyOpenTimestamp      Timestamp{2014-05-22 09:00:00:002}
        InternalDailyCloseTimestamp     Timestamp{2014-05-21 21:00:00:432}
        InternalPriceActivityTimestamp  Timestamp{2014-05-22 16:39:00:012}
        TradingStatus                   17=ReadyToTrade
        RegSHOAction                    1=NoPriceTest
        DailyOpeningPrice               float64{7.49}
        PreviousDailyTotalVolumeTraded  float64{129143}
        PreviousDailyTotalAssetTraded   float64{964612.545}
        PreviousDailyClosingPrice       float64{7.46}
        PreviousBusinessDay             Timestamp{2014-05-21}
        CurrentBusinessDay              Timestamp{2014-05-22}
        LastAuctionPrice                float64{7.49}
        LastAuctionVolume               float64{18306}
        LastAuctionImbalanceSide        char{N}
        InternalLastAuctionTimestamp    Timestamp{2014-05-22 14:29:55:131}
        RetailPriceImprovement          char{N}
        MARKET_NASDAQ_FarPrice          float64{7.49}
        MARKET_NASDAQ_NearPrice         float64{7.49}
```

2.3. Changes to the Quotation Context Data

S&P Capital IQ Real-Time Solutions **introduces** the quotation context tags below to accommodate the information broadcast on the NASDAQ TOTALVIEW market data stream:

Table 4 Quotation tags added on the NASDAQ TOTALVIEW market data stream

Tag Name	Numeric ID	Type
TradeCondition	277	String
TradeID	1003	String

Below is an example of the current implementation of the newly added (in `green`) quotation tags:

```
"TE (TradeEvent) : MARKET_TIME INSTRUMENT LAST_PRICE TRADE_QTY BID_PRICE BID_QTY ASK_PRICE
ASK_QTY *CONTENT_MASK* *FLAGS*"
"VU (ValuesUpdate) : SERVER_TIME INSTRUMENT VALUES..."
"SI (TradeEvent) *SIGNAL* : SERVER_TIME INSTRUMENT SIGNAL LAST_PRICE"

TE  11:19:18:520 330/30659  79.35   200 *   *   *   *
TE  11:19:18:520 330/30659  79.35   300 *   *   *   *       TradeCondition=X=crossed
TE  11:19:18:531 330/30659  *   *   17361   617@1   17396   617@1

***

TE  09:00:10:610  692064127  4.24    1    4.24    63497@2 *       *         TradeID=14
TE  09:00:10:610  692064127  4.24    1    4.24    63496@2 *       *         TradeID=15
TE  09:00:10:610  692064127  4.26    2    *       *       4.26    80997@3   TradeID=16
TE  09:00:10:610  692064127  4.24    1    4.24    63495@2 *       *         TradeID=17
TE  09:00:10:610  692064127  4.24    2    4.24    63493@2 *       *         TradeID=18
```

2.4. Update of the Trading Status Kinematics

In the Trading Status Kinematics before 2014-05-19, during the Pre-Market Trading Hours (04:00-09:30 Eastern Time) and After Market Hours (16:00-20:00 Eastern Time), an instrument had the Trading Status `5=Price Indication`, as shown in the example below:

```
"TE (TradeEvent) : MARKET_TIME INSTRUMENT LAST_PRICE TRADE_QTY BID_PRICE BID_QTY ASK_PRICE
ASK_QTY *CONTENT_MASK* *FLAGS*"
"VU (ValuesUpdate) : SERVER_TIME INSTRUMENT VALUES..."
"SI (TradeEvent) *SIGNAL* : SERVER_TIME INSTRUMENT SIGNAL LAST_PRICE"

TE  01:00:00:162.678   692104167       *       *       254     100@1    *       *
TE  01:00:00:162.693   692104167       *       *       252.75  1@1      *       *
VU  01:05:00:000.006   692104167       RetailPriceImprovement=?
VU  08:05:39:135.565   692104167       TradingStatus=18
VU  08:05:39:135.584   692104167       RegSHOAction=1
SI  09:00:00:000.121   692104167       OPEN    *
TE  09:00:00:000.121   692104167       *       *       *       *        *       *       O
VU  09:00:00:000.121   692104167       TradingStatus=5
TE  09:00:00:014.902   692104167       *       *       160     3@1      *       *
TE  09:00:00:015.412   692104167       *       *       176     4@1      *       *

[...]

TE  18:00:50:524.514   692104167       *       *       177    17@1      *       *
TE  18:00:54:361.653   692104167       *       *       185     5@1      *       *
VU  18:00:54:741.024   692104167       MARKET_NASDAQ_TradingActionReason=LUDP
TradingStatus=5
TE  18:00:54:747.305   692104167       *       *       183    28@6      *       *
TE  18:00:54:747.305   692104167       *       *       189     4@3      *       *
TE  18:00:54:747.488   692104167       *       *       178     4@1      *       *
TE  18:00:54:757.899   692104167       *       *       178     3@2      *       *
VU  18:00:59:741.169   692104167      LastAuctionImbalanceSide=B      LastAuctionVolume=2100
LastAuctionImbalanceVolume=4300
TE  18:00:54:757.899   692104167       *       *       179     4@2      *       *
```

In the Trading Status Kinematics after 2014-05-19, during the same Pre-Market Trading Hours, an instrument has the Trading Status `21=Pre-Open`, while during After Market Hours the Trading Status is `15=New Price Indication`:

```
"TE (TradeEvent) : MARKET_TIME INSTRUMENT LAST_PRICE TRADE_QTY BID_PRICE BID_QTY ASK_PRICE
ASK_QTY *CONTENT_MASK* *FLAGS*"
"VU (ValuesUpdate) : SERVER_TIME INSTRUMENT VALUES..."
"SI (TradeEvent) *SIGNAL* : SERVER_TIME INSTRUMENT SIGNAL LAST_PRICE"

TE  01:00:00:162.678   692104167      *       *       254     100@1    *       *
TE  01:00:00:162.693   692104167      *       *       252.75  1@1      *       *
VU  01:05:00:000.006   692104167      RetailPriceImprovement=?
VU  08:05:39:135.565   692104167      TradingStatus=18
VU  08:05:39:135.584   692104167      RegSHOAction=1
SI  09:00:00:000.121   692104167      OPEN    *
TE  09:00:00:000.121   692104167      *       *       *       *        *       *       O
VU  09:00:00:000.121   692104167      TradingStatus=21
TE  09:00:00:014.902   692104167      *       *       160     3@1      *       *
TE  09:00:00:015.412   692104167      *       *       176     4@1      *       *

[...]

TE  18:00:50:524.514   692104167      *       *       177    17@1      *       *
TE  18:00:54:361.653   692104167      *       *       185     5@1      *       *
VU  18:00:54:741.024   692104167      MARKET_NASDAQ_TradingActionReason=LUDP
TradingStatus=15
TE  18:00:54:747.305   692104167      *       *       183    28@6      *       *
TE  18:00:54:747.305   692104167      *       *       189     4@3      *       *
TE  18:00:54:747.488   692104167      *       *       178     4@1      *       *
TE  18:00:54:757.899   692104167      *       *       178     3@2      *       *
VU  18:00:59:741.169   692104167     LastAuctionImbalanceSide=B     LastAuctionVolume=2100
LastAuctionImbalanceVolume=4300
TE  18:00:54:757.899   692104167      *       *       179     4@2      *       *
```

The table below summarizes the differences between the two kinematics, including the exchange trading schedule:

Table 5 Changes in the Trading Status kinematics on the NASDAQ TOTALVIEW market data stream

Trading Status / Hours	Pre-Market Hours 04:00 – 09:30	Market Hours 09:30 – 16:00	After-Market Hours16:00 – 20:00
Before 2014-05-19	Price Indication	Ready to Trade	Price Indication
After 2014-05-19	Pre-Open	Ready to Trade	New Price Indication

Note	The Trading Status `5=Price Indication` is not deleted. Thus, when a trading exception occurs, the market can still change the trading status to `5=Price Indication` or `2=Halt`.

3. QuantFEED® Technical Implementation

The following sections describe the technical implementation of the new or updated tags:

- 3.1. Operating MIC and Segment MIC
- 3.2. RetailPriceImprovement
- 3.3. TradeCondition
- 3.4. TradeID.

3.1. Operating MIC and Segment MIC

The values of the referential tags **Operating MIC** and **Segment MIC** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the parent and child MIC.

QuantFEED® implementation of the values currently available for the tag `OperatingMIC` and `SegmentMIC` is described in the table below:

Table 6 OperatingMIC and SegmentMIC – technical implementation in QuantFEED®

Component	Value		Description
Tag Name	`OperatingMIC`	`SegmentMIC`	QuantFEED® tag name.
Numeric ID	9533	9534	QuantFEED® unique ID disseminated on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	`String`	String data type.
Format	*[Exchange Specific Value]*	*[Exchange Specific Value]*	An ***exchange specific value***, specifying the parent and child MICs.
Possible Values	XNAS	XNGS	NASDAQ Global Select MarketSM
	XNAS	XNMS	NASDAQ Global MarketSM
	XNAS	XNCM	NASDAQ Capital Market

3.2. RetailPriceImprovement

The values of the quotation tag **Retail Price Improvement** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Other Values* to detail the side of the Retail Price Improvement (RPI):

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

QuantFEED® implementation of the tag `RetailPriceImprovement` is described in the table below:

Table 7 RetailPriceImprovement – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`RetailPriceImprovement`	QuantFEED® tag name.
Numeric ID	9364	QuantFEED® unique ID disseminated on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`Char`	Char data type.
Format	*[Exchange Specific Value]*	An ***exchange specific value***, detailing the side of the Retail Price Improvement (RPI).
Possible Values	B	RPI orders available on the buy side.
	S	RPI orders available on the sell side
	A	RPI orders available on both sides
	N	No RPI orders available

Note	The tag `RetailPriceImprovement` is reset during maintenance time.

3.3. TradeCondition

Each time an on-book trade with 'InternalCross' type occurs, the values of the quotation tag **Trade Condition** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Context*:

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

QuantFEED® implementation of the tag `TradeCondition` is described in the table below:

Table 8 TradeCondition – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`TradeCondition`	QuantFEED® tag name.
Numeric ID	`277`	QuantFEED® unique ID disseminated on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the particular condition applicable to the trade.
Possible Values	`X`	Crossed

3.4. TradeID

Each time a trade occurs, the values of the quotation context tag **Trade ID** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Context* to detail the unique ID assigned to the trade entity once it is received or matched by the exchange or central counterparty:

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

QuantFEED® implementation of the values currently available for the tag `TradeID` is described in the table below:

Table 9 TradeID – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`TradeID`	QuantFEED® tag name.
Numeric ID	`1003`	QuantFEED® unique ID disseminated on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the unique ID assigned to the trade entity once it is received or matched by the exchange or central counterparty.

4. Finding the Latest Information

For the latest documentation and product updates, additional support and training, please contact our support services:

- E-mail: rts-support@spcapitaliq.com
- Web: http://support.quanthouse.com.