S&P Capital IQ Real-Time Solutions

QuantFEED® Developer's Notice

NASDAQ TOTALVIEW – Feed Update

Reference n°: 20140709 – 17826 – 21453 – Update01

Effective as of: 04 August 2014*

Action required from users: MANDATORY ACTION

S&P CAPITAL IQ
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* This is the proposed day for the update of the standard version of the feed handler. For dedicated feed handlers, this date may differ. For the actual day when the changes to your custom feed handler take effect, please contact your QuantFEED® project manager.

S&P Capital IQ Real-Time Solutions (QuantHouse®) – QuantFEED®
QuantFEED® Developer's Notice
Reference 20140709 – 17826 – 21453 – Update01
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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
- 2. QuantFEED® Technical Implementation
- 3. Finding the Latest Information.

1. Update Summary

Table 1 Current update summary

Notice Reference	20140709 – 17826 – 21453 - Update01
Exchanges	NASDAQ TOTALVIEW
Concerned MICs	XNAS
Internal Source ID	63
Effective Date	**2014-08-04***
Impact	• Update of the Referential Tags • Update of the Quotation Tags
Action required	**MANDATORY ACTION** – see sections 2.1.1. SecurityType and 2.1.2. CFICode.

2. QuantFEED® Technical Implementation

Effective Monday, **August 04*, 2014**, S&P Capital IQ Real-Time Solutions enhances the content of the referential data, market news and Last Price Kinematics to accommodate the new information disseminated on the NASDAQ TOTALVIEW market data stream, as described below:

- 2.1. Changes to the Referential Data

* This is the proposed day for the update of the standard version of the feed handler. For dedicated feed handlers, this date may differ. For the actual day when the changes to your custom feed handler take effect, please contact your QuantFEED® project manager.

- 2.2. Changes to the Market News – Market Wide Circuit Breaker
- 2.3. Changes to the Level1 Market Data Kinematics – Last Price Update Mechanism.

2.1. Changes to the Referential Data

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

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

Tag Name	Numeric ID	Type
`MinTradeVol`	562	Float64
`IPO_Indicator`	9406	Bool

Moreover, S&P Capital IQ Real-Time Solutions **updates** the values of the referential tags below:

Table 3 Referential tags disseminating updated content on the NASDAQ TOTALVIEW market data stream

Tag Name	Numeric ID	Type
`SecurityType`	167	String
`CFICode`	461	String

2.1.1. SecurityType

The values of the referential tag **Security Type** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the type of security.

QuantFEED® implementation of the tag `SecurityType` is described in the table below (existing values are in `black`, newly added values are in `green`, and removed values are in ~~`crossed out red`~~):

Table 4 SecurityType – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`SecurityType`	QuantFEED® tag name.
Numeric ID	`167`	QuantFEED® unique ID disseminated on the 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 type of security.
Possible Values	`NONE`	Unknown Security Type
	~~`COFP`~~	Certificate of Participation
	`CS`	Common Stock
	`GO`	General Obligation Bonds
	`MF`	Mutual Fund (Exchangeable Traded Fund)
	`PS`	Preferred Stock
	`WAR`	Warrant

2.1.2. CFICode

The values of the referential tag **CFI Code** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the standardized identification code of an instrument.

QuantFEED® implementation of the tag `CFICode` is described in the table below (existing values are in `black`, newly added values are in `green`, and removed values are in ~~`crossed out red`~~):

Table 5 CFICode – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`CFICode`	QuantFEED® tag name.
Numeric ID	`461`	QuantFEED® unique ID disseminated on the 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 standardized identification code of an instrument.
Possible Values	`DBXXXX`	Debts - Bonds
	~~`DCXXXX`~~	Debts - Convertible Bonds
	`EPXXXX`	Equities - Preferable Shares
	~~`ESNXXX`~~	Equities - Shares - Non-Voting
	~~`ESVXXX`~~	Equities - Shares - Voting
	`ESXXXA`	Equities - Shares - Registered Depository Receipt
	`ESXXXX`	Equities - Shares
	`EUXXXX`	Equities - Units
	`EXXXXX`	Equities
	`RWXXXX`	Rights - Warrants
	~~`RXXXXX`~~	Rights
	`XXXXXX`	Undefined

The example below shows the list `SecurityTypes` and `CFICodes`, before and after 2014-08-04:

```
BEFORE 2014-08-04                                AFTER 2014-08-04
{ XNAS COFP  XXXXXX }                            { XNAS CS    ESXXXA }
{ XNAS CS    ESNXXX }                            { XNAS CS    ESXXXX }
{ XNAS CS    ESVXXX }                            { XNAS CS    EXXXXX }
{ XNAS CS    ESXXXA }                            { XNAS GO    DBXXXX }
{ XNAS CS    ESXXXX }                            { XNAS MF    EUXXXX }
{ XNAS MF    EUXXXX }                            { XNAS NONE  XXXXXX }
{ XNAS NONE  DCXXXX }                            { XNAS PS    EPXXXX }
{ XNAS NONE  EUXXXX }                            { XNAS WAR   RWXXXX }
{ XNAS NONE  EXXXXX }
{ XNAS NONE  RXXXXX }
{ XNAS NONE  XXXXXX }
{ XNAS PS    EPXXXX }
{ XNAS WAR   RWXXXX }
```

2.1.3. MinTradeVol

The values of the referential tag **MinTradeVol** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the lot size value.

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

Table 6 MinTradeVol – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`MinTradeVol`	QuantFEED® tag name.
Numeric ID	`562`	QuantFEED® unique ID disseminated on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`Float64`	Float64 data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, specifying the lot size value.
Possible Values	`1`	Round Lots Only
	`<other_value>`	Round Lot Size

2.1.4. IPO_Indicator

The values of the referential tag **IPO_Indicator** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED® data stream in *Referential* to specify whether a security is in an Initial Public Offering or not.

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

Table 7 IPO_Indicator – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`IPO_Indicator`	QuantFEED® tag name.
Numeric ID	`9406`	QuantFEED® unique ID disseminated on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`Bool`	Boolean data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, specifying whether a security is in an Initial Public Offering or not.
Possible Values	`True`	The security is in an IPO.
	`False`	The security is not in an IPO.

Referential Data Sample

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

```
instr # 330/9074 = 692069234
    PriceCurrency               string{USD}
    Symbol                      string{MCLB}
    Description                 string{Microlin Bio, Inc. - Common Stock}
    SecurityType                string{CS}
    FOSMarketId                 XNAS
    CFICode                     string{ESXXXX}
    RoundLot                    float64{100}
    MinTradeVol                 float64{1}
    InternalCreationDate        Timestamp{2014-07-11 15:31:48:300}
    InternalModificationDate    Timestamp{2014-07-11 15:31:58:785}
    InternalSourceId            uint16{63}
    InternalEntitlementId       NAS
    IPO_Indicator               bool{True}
    LocalCodeStr                string{MCLB}
    PriceIncrement_dynamic_TableId      uint32{4587620}
    OperatingMIC                string{XNAS}
    SegmentMIC                  string{XNCM}
```

2.2. Changes to the Market News – Market Wide Circuit Breaker

Each time an extraordinary market volatility occurs, the values of the **Level 1, Level 2 and Level 3 Halts of the Market-Wide Circuit Breakers**, which halt the trading in all exchange listed securities throughout the U.S. markets, as well as the **breached level** conveyed on the NASDAQ TOTALVIEW market data stream are disseminated via QuantFEED®'s data stream in *Market News*:

- in the callback carrying the Level1 event `notif_MarketNews()`, for C++
- in the event handler `MarketNewsEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifMarketNewsEvent`, for Java.

The format of the **Market-Wide Content Breaker Decline Level Message**, which conveys the values of the three level halts in the market news, follows the template described below:

```
Market-wide circuit breaker indicator
MarketId=<market ID>
Level1=<level1>
Level2=<level2>
Level3=<level3>


Example:
MN      null    null    XNAS    Normal     Market-wide circuit breaker level status
MarketId=Q;  Level1=144.45;  Level2=135.13;  Level3=124.26     related_instruments:
```

The format of the **Market-Wide Content Breaker Status Message**, which conveys the breached level in the market news, follows the template described below:

```
Market-wide circuit breaker indicator
MarketId=<market_id >
LevelBreached=<Level>
```

2.3. Changes to the Level1 Market Data Kinematics – Last Price Update Mechanism

In the Level1 Market Data Kinematics before 2014-08-04, the Last Price of IPO securities was not sent, as shown 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  11:51:02:583.815  692069333  *       *       10.23    100@1   *       *
TE  12:05:19:624.662  692069333  *       *       12       1495@2  *       *
TE  12:07:17:919.936  692069333  *       *       10.27    100@1   *       *
TE  12:36:06:876.842  692069333  *       *       10.27    200@2   *       *
TE  12:50:00:809.175  692069333  *       *       *        *       *       *  HL
TE  13:27:25:442.795  692069333  *       *       12.59    100@1   *       *
```

In the Level1 Market Data Kinematics after 2014-08-04, the Last Price of IPO securities is sent, when provided by the market, 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  11:51:02:583.815  692069333  *       *       10.23    100@1   *       *
TE  12:05:19:624.662  692069333  *       *       12       1495@2  *       *
TE  12:07:17:919.936  692069333  *       *       10.27    100@1   *       *
TE  12:36:06:876.842  692069333  *       *       10.27    200@2   *       *
TE  12:50:00:809.175  692069333  10      *       *        *       *       *  HL
TE  13:27:25:442.795  692069333  *       *       12.59    100@1   *       *
```

3. 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.