S&P Capital IQ Real-Time Solutions

QuantFEED® Developer's Notice

NYSE FUSION – Feed Update

Reference n°: 20140219

Effective as of: 24 February 2014

Action required from users: Attention Required (Optional)

S&P
CAPITAL IQ
McGRAW HILL FINANCIAL

S&P Capital IQ Real-Time Solutions (QuantHouse®) – QuantFEED®
QuantFEED® Developer's Notice
Reference 20140219
February 19, 2014

Corporate Headquarters
S&P Capital IQ Real-Time Solutions (QuantHouse®)
52 Rue de la Victoire
75009 Paris
France
Tel: +33 (0) 1 73 02 32 11
Fax: +33 (0) 1 73 02 32 12

UK Office
10 Foster Lane
London EC2V 6HR
United Kingdom
Tel: +44 (0) 203 107 1676

US Offices
55 Water Street, 44th floor
New York, NY 10041
United States of America
Tel: +1-(212)-438-4346

130 East Randolph
One Prudential Plaza, Suite 2900
Chicago, IL 60601
United States of America
Tel: +1-(312)-233-7129

www.quanthouse.com

UPDATE OF THE NYSE FUSION MARKET DATA STREAM

To reflect the changes caused by the dissemination of new values on the NYSE FUSION 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	20140219
Exchanges	NYSE FUSION
Concerned MICs	XNYS
Internal Source ID	140
Effective Date	**2014-02-24**
Impact	• Update of the Referential Tags • Update of the Quotation Tags • Update of the Quotation Context Tags • Update of the L1 Kinematics
Action required	**Attention Required (Optional)**

2. Functional Description

Effective Monday, February **24, 2014**, S&P Capital IQ Real-Time Solutions changes the content of the referential and quotation data disseminated on NYSE FUSION market data stream to reflect the feed handler upgrade, as described below:

- 2.3. Changes to Quotation Context Data.

2.1. Changes to Referential Data

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

Table 2 Referential tags added on NYSE FUSION market data stream

Tag Name	Numeric ID	Type
`PriceCurrency`	15	String
`OperatingMIC`	9533	String

Below is an example of the new referential tags implementation (in `green`):

```
instr # 336/10623 = 704653695
    PriceCurrency                string{USD}
    Symbol                       string{BGE PRB}
    Description                 string{BGE Capital Trust II 6.20% Trust Preferred Securities}
    SecurityType                 string{NONE}
    FOSMarketId                  XNYS
    CFICode                      string{EXXXXX}
    InternalCreationDate         Timestamp{2014-02-12 14:02:45:524}
    InternalModificationDate     Timestamp{2014-02-13 09:00:01:454}
    InternalSourceId             uint16{140}
    LocalCodeStr                 string{1092}
    CUSIP                        string{05541Q206}
    PriceIncrement_static        float64{0.01}
    OperatingMIC                 string{XNYS}
```

2.2. Changes to Quotation Data

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

Table 3 Quotation tags added on NYSE FUSION market data stream

Tag Name	Numeric ID	Type
`RegSHOAction`	9113	Enum
`InternalDailyClosingPriceType`	9155	Char
`PreviousInternalDailyClosingPriceType`	9156	Char

Below is an example of the new quotation tags implementation (in `green`):

```
InstrumentStatusL1
-- 336/10344
        BID: 19        0       *NO ORDER*
        ASK: 20.44     0       *NO ORDER*
        LastPrice                       float64{20.43}
        LastTradeQty                    float64{55747}
        DailyHighPrice                  float64{20.49}
        DailyLowPrice                   float64{18.85}
        DailyTotalVolumeTraded          float64{274951}
        DailyTotalAssetTraded           float64{5538671.548}
        LastTradePrice                  float64{20.43}
        LastTradeTimestamp              Timestamp{2014-02-13 21:01:44:530}
        InternalDailyOpenTimestamp      Timestamp{2014-02-13 14:31:00:958}
        InternalDailyCloseTimestamp     Timestamp{2014-02-13 21:01:44:534}
        InternalDailyHighTimestamp      Timestamp{2014-02-13 20:53:46:495}
        InternalDailyLowTimestamp       Timestamp{2014-02-13 14:35:02:546}
        InternalPriceActivityTimestamp  Timestamp{2014-02-14 09:00:01:565}
        TradingStatus                   21=PreOpen
        RegSHOAction                    3=PriceTestRemainsInEffect
        DailyOpeningPrice               float64{19.83}
        DailyClosingPrice               float64{20.43}
        PreviousDailyTotalVolumeTraded  float64{176926}
        PreviousDailyTotalAssetTraded   float64{3722388.934}
        PreviousDailyClosingPrice       float64{20.43}
        PreviousBusinessDay             Timestamp{2014-02-12}
        CurrentBusinessDay              Timestamp{2014-02-13}
        InternalDailyClosingPriceType   char{a}
        PreviousInternalDailyClosingPriceType   char{a}
        InternalLastAuctionTimestamp    Timestamp{2014-02-13 21:00:00:030}
        MARKET_NYSE_TradeCond           string{@6 @}
```

Furthermore, S&P Capital IQ Real-Time Solutions changes the L1 kinematics by modifying:

- the reset of the Last Auction tags – `LastAuctionPrice` (**NumericID**: `9146`, **Type**: `Float64`), `LastAuctionVolume` (**NumericID**: `9147`, **Type**: `Float64`), `LastAuctionImbalanceSide` (**NumericID**: `9151`, **Type**: `Char`) and `LastAuctionImbalanceVolume` (**NumericID**: `9152`, **Type**: `Float64`) and
- the values disseminated by the quotation tag `LastPrice` (**NumericID**: `9106`, **Type**: `Float64`).

2.3. Changes to Quotation Context Data

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

Table 4 Quotation context tags added on NYSE FUSION market data stream

Tag Name	Numeric ID	Type
`TradeID`	1003	String

Below is an example of the new quotation context tags implementation (in `green`):

```
TE      16:15:25:423 704653416      *       *       *       *       19.92   200@2
TE      16:15:30:419 704653416      *       *       19.9    500@5   *       *
TE      16:15:34:201 704653416      19.91   100     *       *       *       *
TradeID=484
TE      16:15:44:828 704653416      *       *       *       *       19.92   300@3
TE      16:15:49:104 704653416      *       *       19.9    400@4   *       *
TE      16:15:49:104 704653416      *       *       19.89   300@3   *       *
TE      16:15:49:105 704653416      *       *       *       *       19.92   400@4
TE      16:15:49:105 704653416      *       *       *       *       19.92   500@5
TE      16:15:49:104 704653416      19.9    400     *       *       *       *
TradeID=485
VU      16:15:49:104 704653416      MARKET_NYSE_TradeCond=@F @
```

3. QuantFEED® Technical Implementation

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

- 3.1. Price Currency
- 3.2. Operating MIC
- 3.3. Short Sale Price Restriction
- 3.4. Internal Daily Closing Price Type
- 3.5. Previous Internal Daily Closing Price Type
- 3.6. TradeID
- 3.7. NYSE FUSION L1 Kinematics Update.

3.1. Price Currency

The values of the referential tag **Price Currency** conveyed on the NYSE FUSION market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the currency of the price.

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

Table 5 PriceCurrency – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`PriceCurrency`	QuantFEED® tag name.
Numeric ID	`15`	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***, specifying the currency of the price.
Possible Values	`USD`	United States Dollar

3.2. Operating MIC

The values of the referential tag **Operating MIC** conveyed on the NYSE FUSION market data stream are disseminated via QuantFEED® data stream in *Referential* to specify the parent MIC.

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

Table 6 OperatingMIC – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`OperatingMIC`	QuantFEED® tag name.
Numeric ID	`9533`	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***, specifying the parent MIC.
Possible Values	`XNYS`	Parent MIC for all NYSE FUSION branches.

3.3. Short Sale Price Restriction

Each time a short sale price restriction occurs, the values of the quotation tag **Short Sale Price Restriction** conveyed on the NYSE FUSION market data stream are disseminated via QuantFEED® data stream in *Other Values*:

- 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 `RegSHOAction` is described in the table below:

Table 7 RegSHOAction – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`RegSHOAction`	QuantFEED® tag name.
Numeric ID	`9113`	QuantFEED® unique ID broadcast on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`Enum`	Enum data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the short sale restriction status.
Possible Values	`1`	Short sale restriction deactivated – No Price Test.
	`2`	Short sale restriction activated – Price Test in effect.
	`3`	Short sale restriction continued – Price Test remains in effect.

3.4. Internal Daily Closing Price Type

The values of the quotation tag **Internal Daily Closing Price Type** conveyed on the NYSE FUSION market data stream are disseminated via QuantFEED® data stream in *Other Values* to indicate the type of the internal daily closing price:

- 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 `InternalDailyClosingPriceType` is described in the table below:

Table 8 InternalDailyClosingPriceType – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`InternalDailyClosingPriceType`	QuantFEED® tag name.
Numeric ID	`9155`	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 type of the internal daily closing price.
Possible Values	`a`	**Official Close** – Explicit closing price value calculated and distributed by an exchange for the main trading session of a given trading day.
	`e`	**Last Eligible Price** – Execution price of the final trade (subject to trade qualifiers) accepted by the exchange for the main trading session of a given trading day.

3.5. Previous Internal Daily Closing Price Type

The values of the quotation tag **Previous Internal Daily Closing Price Type** conveyed on the NYSE FUSION market data stream are disseminated via QuantFEED® data stream in *Other Values* to indicate the type of the previous internal daily closing price:

- 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 `PreviousInternalDailyClosingPriceType` is described in the table below:

Table 9 PreviousInternalDailyClosingPriceType – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`PreviousInternalDailyClosingPriceType`	QuantFEED® tag name.
Numeric ID	`9156`	QuantFEED® unique ID disseminated on S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.

Table 9 PreviousInternalDailyClosingPriceType – technical implementation in QuantFEED® (Continued)

Component	Value	Description
Type	`Char`	Char data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the type of the previous internal daily closing price.
Possible Values	`a`	**Official Close** – Explicit closing price value calculated and distributed by an exchange for the main trading session of a given trading day.
	`e`	**Last Eligible Price** – Execution price of the final trade (subject to trade qualifiers) accepted by the exchange for the main trading session of a given trading day.

3.6. TradeID

Each time a trade occurs, the values of the quotation context tag **Trade ID** conveyed on the NYSE FUSION 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 10 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.

3.7. NYSE FUSION L1 Kinematics Update

The following sections describe the L1 kinematics changes in terms of:

- 3.7.1. Normalizing the Reset of the Last Auction Tags
- 3.7.2. Last Price Eligibility.

3.7.1. Normalizing the Reset of the Last Auction Tags

The following sections describe the reset of the Last Auction tags – `LastAuctionPrice` (**NumericID**: `9146`, **Type**: `Float64`), `LastAuctionVolume` (**NumericID**: `9147`, **Type**: `Float64`), `LastAuctionImbalanceSide` (**NumericID**: `9151`, **Type**: `Char`) and `LastAuctionImbalanceVolume` (**NumericID**: `9152`, **Type**: `Float64`) – on the NYSE FUSION market data stream before and after 2014-02-24:

- 3.7.1.1. Reset of the Last Auction Tags before 2014-02-24
- 3.7.1.2. Reset of the Last Auction Tags after 2014-02-24.

3.7.1.1. Reset of the Last Auction Tags before 2014-02-24

In the L1 kinematics before 2014-02-24, the reset of the Last Auction tags was handled differently, depending on the session type, as shown in the examples below:

```
VU      14:28:00:092 704655815       LastAuctionImbalanceSide=N
LastAuctionImbalanceVolume=0    LastAuctionPrice=3.07    LastAuctionVolume=0
VU       14:30:03:945 704655815       LastAuctionImbalanceSide=N
LastAuctionImbalanceVolume=0    LastAuctionPrice=0      LastAuctionVolume=0

...

VU      21:00:00:014 704655815       LastAuctionVolume=1024800
LastAuctionImbalanceVolume=31200
VU      21:00:14:013 704655815       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
```

3.7.1.2. Reset of the Last Auction Tags after 2014-02-24

In the L1 kinematics after 2014-02-24, the reset of the Last Auction tags is handled identically, regardless the session type, as shown in the examples below:

```
VU      09:00:00:804 704655815       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21
VU      09:00:00:805 704656607       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21
VU      09:00:00:810 704656609       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21

...

VU      13:00:00:108 704656608       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21
VU      13:00:00:114 704657201       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21
VU      13:00:00:129 704657259       LastAuctionImbalanceVolume=?
LastAuctionImbalanceSide=?      LastAuctionPrice=?      LastAuctionVolume=?
TradingStatus=21
```

3.7.2. Last Price Eligibility

The following sections describe the last price eligibility on the NYSE FUSION market data stream before and after 2014-02-24:

- 3.7.2.1. Last Price Eligibility before 2014-02-24
- 3.7.2.2. Last Price Eligibility after 2014-02-24.

3.7.2.1. Last Price Eligibility before 2014-02-24

In the L1 kinematics before 2014-02-24, the values of the quotation tag `LastPrice` (**NumericID**: `9106`, **Type**: `Float64`) conveyed on the NYSE FUSION market data stream disseminated any trade price, as shown in the examples below:

```
TE      15:22:47:669 704653416      19.86    100      *        *        *        *
TE      15:22:47:670 704653416      *        *        19.84    400@2    *        *
TE      15:22:47:671 704653416      *        *        19.84    500@3    *        *
TE      15:22:47:672 704653416      *        *        19.84    400@2    *        *
TE      15:22:47:673 704653416      *        *        *        *        19.89    200@2
TE      15:22:47:675 704653416      *        *        19.85    300@1    *        *
TE      15:22:47:675 704653416      *        *        19.85    400@2    *        *
TE      15:22:47:679 704653416      *        *        19.85    701@3    *        *
TE      15:22:47:686 704653416      *        *        19.85    400@2    *        *
TE      15:22:47:688 704653416      *        *        19.86    300@1    *        *
TE      15:22:47:688 704653416      *        *        19.86    400@2    *        *
TE      15:22:47:688 704653416      *        *        19.86    300@1    *        *
TE      15:22:47:692 704653416      *        *        19.86    400@2    *        *
TE      15:22:48:333 704653416      *        *        *        *        19.88    200@1
TE      15:22:50:386 704653416      *        *        *        *        19.88    300@2
TE      15:23:08:972 704653416      19.863   75       *        *        *        *
VU      15:23:08:972 704653416      MARKET_NYSE_TradeCond=@   I
```

3.7.2.2. Last Price Eligibility after 2014-02-24

In the L1 kinematics after 2014-02-24, the values of the quotation tag `LastPrice` (**NumericID**: `9106`, **Type**: `Float64`) conveyed on the NYSE FUSION market data stream will disseminate only the trade prices that are eligible for the Closing Price, as shown in the examples below:

```
TE      15:22:47:669 704653416      19.86    100      *        *        *        *
TradeID=331
TE      15:22:47:670 704653416      *        *        19.84    400@2    *        *
TE      15:22:47:671 704653416      *        *        19.84    500@3    *        *
TE      15:22:47:672 704653416      *        *        19.84    400@2    *        *
TE      15:22:47:673 704653416      *        *        *        *        19.89    200@2
TE      15:22:47:675 704653416      *        *        19.85    300@1    *        *
TE      15:22:47:675 704653416      *        *        19.85    400@2    *        *
TE      15:22:47:679 704653416      *        *        19.85    701@3    *        *
TE      15:22:47:686 704653416      *        *        19.85    400@2    *        *
TE      15:22:47:688 704653416      *        *        19.86    300@1    *        *
TE      15:22:47:688 704653416      *        *        19.86    400@2    *        *
TE      15:22:47:688 704653416      *        *        19.86    300@1    *        *
TE      15:22:47:692 704653416      *        *        19.86    400@2    *        *
TE      15:22:48:333 704653416      *        *        *        *        19.88    200@1
TE      15:22:50:386 704653416      *        *        *        *        19.88    300@2
TE      15:23:08:972 704653416      19.863   75       *        *        *        *
TradeID=332
VU      15:23:08:972 704653416      LastPrice=19.86 MARKET_NYSE_TradeCond=@   I
```

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.