S&P Capital IQ's Real-Time Solutions

QuantFEED® Developer's Notice

NASDAQ UTP – Feed Update

Reference n°: 20130829

Effective as of: 07 September 2013

Action required from users: Optional

S&P CAPITAL IQ
McGRAW HILL FINANCIAL

S&P Capital IQ's Real-Time Solutions (QuantHouse®) – QuantFEED®
QuantFEED® Developer's Notice
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UPDATE OF THE NASDAQ UTP MARKET DATA STREAM

To reflect the changes caused by the dissemination of new values on NASDAQ UTP market data stream, S&P Capital IQ's 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	20130829
Scope	Reference Data
Exchanges	NASDAQ UTP
Effective Date	**2013-09-07**
Impact	• Introduction of Market News • Update of Quotation Tags • New Trading Status value
Action required	Optional

2. Functional Description

Effective Saturday, **September 07, 2013**, S&P Capital IQ's Real-Time Solutions introduces three new quotation tags – `LowLimitPrice` (**NumericID**: `1148`, **Type**: `Float64`), `HighLimitPrice` (**NumericID**: `1149`, **Type**: `Float64`) and `LimitUpLimitDownIndicator` (**NumericID**: `9255`, **Type**: `Char`) – to accommodate the information disseminated on NASDAQ UTP market data stream.

Moreover, S&P Capital IQ's Real-Time Solutions also adds a new Trading Status value, **5 – Price Indication**, to provide you with additional details about the status of an instrument.

Additionally, the referential tag `PriceCurrency` (**NumericID**: `15`, **Type**: `String`) will disseminate only one value – `USD`.

Moreover, the tag `MARKET_NASDAQ_UTP_SaleCondition` (**NumericID**: `15650`, **Type**: `String`) displays a single value when the exchange sends only one, instead of a value and additional hyphens.

Furthermore, the Market News on the NASDAQ UTP market data stream will disseminate the different levels of the Market-Wide Circuit Breakers.

3. QuantFEED® Technical Implementation

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

- 3.1. Price Currency
- 3.2. Trading Status
- 3.3. Low Limit Price
- 3.4. High Limit Price
- 3.5. Limit Up Limit Down Indicator
- 3.6. Sale Condition
- 3.7. Market Wide Circuit Beaker.

3.1. Price Currency

The values of the referential tag **Price Currency** conveyed on the NASDAQ UTP market data stream are disseminated via QuantFEED®'s data stream in *Referential* to identify the currency used for the price.

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

Table 2 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's Real-Time Solutions's data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, identifying the currency used for the price.
Possible Values	`USD`	US Dollar

Below is an example of the current implementation of the newly added or updated referential tags:

```
instr # 319/501377 = 669492865
    PriceCurrency               string{USD}
    Symbol                      string{JDSU}
    Description                 string{JDS UNIPHASE CP}
    SecurityType                string{CS}
    FOSMarketId                 Xudf
    CFICode                     string{ESXXXX}
    RoundLot                    float64{100}
    SecuritySubType             string{C}
    InternalCreationDate        Timestamp{2013-03-11 08:02:00:455}
    InternalModificationDate    Timestamp{2013-08-14 08:00:00:583}
    InternalSourceId            uint16{51}
    LocalCodeStr                string{JDSU}
    ForeignFOSMarketId          XNAS
    PriceIncrement_dynamic_TableId  uint32{3342436}
```

3.2. Trading Status

Each time a modification of the trading status occurs, the values of the quotation tag **Trading Status** conveyed on the NASDAQ UTP market data stream are disseminated via QuantFEED®'s 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®'s implementation of the tag `TradingStatus` is described in the following table (newly added values are in **bold**):

Table 3 TradingStatus – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`TradingStatus`	QuantFEED® tag name.
Numeric ID	9100	QuantFEED® unique ID disseminated on S&P Capital IQ's Real-Time Solutions's 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 characteristics of the trading status.
Possible Values	2	Trading Halt
	5	**Price Indication**
	17	Ready to Trade
	18	Not Available for Trading

3.3. Low Limit Price

The values of the quotation tag **Low Limit Price** are disseminated via QuantFEED®'s data stream in *Other Values* to indicate the inferior price limit:

- 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®'s implementation of the tag `LowLimitPrice` is described in the following table:

Table 4 LowLimitPrice – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`LowLimitPrice`	QuantFEED® tag name.
Numeric ID	`1148`	QuantFEED® unique ID disseminated on S&P Capital IQ's Real-Time Solutions's data stream. This is the numeric equivalent of the tag name.
Type	`Float64`	Float64 data type.
Format / Possible values	*`[Exchange Specific Value]`*	An ***exchange specific value***, indicating the inferior price limit.

3.4. High Limit Price

The values of the quotation tag **High Limit Price** are disseminated via QuantFEED®'s data stream in *Other Values* to indicate the superior price limit:

- 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®'s implementation of the tag `HighLimitPrice` is described in the following table:

Table 5 HighLimitPrice – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`HighLimitPrice`	QuantFEED® tag name.
Numeric ID	`1149`	QuantFEED® unique ID disseminated on S&P Capital IQ's Real-Time Solutions's data stream. This is the numeric equivalent of the tag name.
Type	`Float64`	Float64 data type.
Format / Possible values	*`[Exchange Specific Value]`*	An ***exchange specific value***, indicating the superior price limit.

3.5. Limit Up Limit Down Indicator

The values of the quotation tag **Limit Up Limit Down Indicator** are disseminated via QuantFEED®'s data stream in *Other Values* to indicate the type of specified price bands:

- 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.

The **Limit Up-Limit Down** (LULD) mechanism aims at addressing extraordinary market volatility in U.S. equity markets. This mechanism is intended to prevent trades in National Market System (NMS) securities from occurring outside of specified price bands. The bands would be set at a percentage level above and below the average reference price of the security over the immediately preceding five-minute period.

To accommodate more fundamental price moves, there would be a five-minute trading pause – similar to the pause triggered by the current single-stock circuit breakers – only if trading is unable to occur within the specified price band after 15 seconds.

QuantFEED®'s implementation of the tag `LimitUpLimitDownIndicator` is described in the following table:

Table 6 LimitUpLimitDownIndicator – technical implementation in QuantFEED®

Component	Value		Description
Tag Name	`LimitUpLimitDownIndicator`		QuantFEED® tag name.
Numeric ID	`9255`		QuantFEED® unique ID disseminated on S&P Capital IQ's Real-Time Solutions's data stream. This is the numeric equivalent of the tag name.
Type	`Char`		Char data type.
Format	*`[Exchange Specific Value]`*		An ***exchange specific value***, indicating the type of specified price bands.
Possible values	**Regional**	`<space>`	Limit Up Limit Down Not applicable.
		A	Bid Price above Upper Limit Price Band – Bid is Non-Executable.
		B	Ask Price below Lower Limit Price Band – Ask is Non-Executable.
		C	Bid and Ask outside price band. Not executable.
	National	`<space>`	Limit Up Limit Down Not applicable.
		A	National Best Bid and National Best Ask are Executable.
		B	National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable.
		C	National Best Ask above Upper Limit Price Band – National Best Ask is Non-Executable.
		D	National Best Bid below Lower Limit Price Band and National Best Ask above Upper Limit Price Band – National Best Bid and National Best Ask are Non-Executable.
		E	National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State.
		F	National Best Offer equals Lower Limit Price Band – National Best Ask is in Limit State.
		G	National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State and National Best Ask above Upper Limit Price Band – National Best Ask is Non-Executable.
		H	National Best Ask equals Lower Limit Price Band – National Best Ask is in Limit State and National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable.
		I	National Best Bid equals Upper Limit Price Band and National Best Ask equals Lower Limit Price Band.

Below is an example of the current implementation of the newly added or updated quotation tags:

```
InstrumentStatusL1
-- 319/501377
        BID: 14.59      1500
        ASK: 14.6       2200
        LastPrice                      float64{14.6}
        LastTradeQty                   float64{100}
        DailyHighPrice                 float64{15}
        DailyLowPrice                  float64{14.32}
        DailyTotalVolumeTraded         float64{8237482}
        DailyTotalAssetTraded          float64{121225428.4199}
        LastTradePrice                 float64{14.6}
        LastTradeTimestamp             Timestamp{2013-08-14 15:06:41:336}
        InternalDailyOpenTimestamp     Timestamp{2013-08-14 09:00:00:179}
        InternalDailyCloseTimestamp    Timestamp{2013-08-14 01:00:00:029}
        InternalDailyHighTimestamp     Timestamp{2013-08-14 13:34:43:521}
        InternalDailyLowTimestamp      Timestamp{2013-08-14 14:32:02:416}
        InternalPriceActivityTimestamp Timestamp{2013-08-14 15:06:41:338}
        LowLimitPrice                  float64{13.8}
        HighLimitPrice                 float64{15.25}
        TradingStatus                  17=ReadyToTrade
        DailyOpeningPrice              float64{14.62}
        PreviousDailyTotalVolumeTraded float64{7966423}
        PreviousDailyTotalAssetTraded  float64{119517731.0189}
        PreviousDailyClosingPrice      float64{14.8}
        PreviousBusinessDay            Timestamp{2013-08-13}
        CurrentBusinessDay             Timestamp{2013-08-14}
        LimitUpLimitDownIndicator      char{A}
        PriceActivityMarketTimestamp   Timestamp{2013-08-14 15:06:41:336}
```

3.6. Sale Condition

Each time an UTP participant enters a transaction, the values of the quotation tag **Sale Condition** conveyed on the NASDAQ UTP market data stream are disseminated via S&P Capital IQ's Real-Time Solutions's data stream in *Context* to indicate the type of trade:

- 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 `MARKET_NASDAQ_UTP_SaleCondition` is described in the table below:

Table 7 MARKET_NASDAQ_UTP_SaleCondition – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`MARKET_NASDAQ_UTP_SaleCondition`	QuantFEED® tag name.
Numeric ID	`15650`	QuantFEED® unique ID broadcast on S&P Capital IQ's Real-Time Solutions's data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format	*[Exchange Specific Value]*	An ***exchange specific value***, indicating the type of trade transaction entered by an UTP participant.
Possible Values	`@`	Regular Trade
	`F`	Intermarket Sweep
	`T`	Form T
	`1`	Stopped Stock
	`C`	Cash
	`O`	Opening Prints
	`L`	Sold Last
	`A`	Acquisition
	`N`	Next Day
	`4`	Derivatively Priced
	`Z`	Sold (Out of Sequence)
	`B`	Bunched
	`R`	Seller
	`5`	Re-Opening Prints
	`U`	Extended trading hours – Sold Out of Sequence
	`D`	Distribution
	`Y`	Yellow Flag
	`6`	Closing Prints
	`E`	Placeholder future use
	`7`	Placeholder 611 Exempt
	`G`	Bunched Sold Trade
	`8`	Placeholder 611 Exempt
	`H`	Price Variation Trade
	`9`	Placeholder 611 Exempt
	`K`	Rule 155
	`M`	Market Center Official Close Price
	`P`	Prior Reference Price
	`Q`	Market Center Official Open Price
	`S`	Split Trade
	`V`	Stock-Option Trade
	`W`	Average Price Trade
	`X`	Cross Trade

Currently, the tag `MARKET_NASDAQ_UTP_SaleCondition` displays a single value when the exchange sends only one, instead of a value and additional hyphens, as shown in the examples below:

NASDAQ UTP Previous Version

```
EV 511/500004           2013-08-21 15:54:04:844
content: LastPrice LastTradeQty Context
         LastTradeQty  = 100
         LastPrice     = 34.96
CONTEXT:
MARKET_NASDAQ_UTP_SaleCondition:        @F--
EV 511/500004           2013-08-21 15:54:05:333
content: LastPrice LastTradeQty
         LastTradeQty  = 100
         LastPrice     = 34.96
```

NASDAQ UTP Current Version

```
EV 511/500004           2013-08-21 15:54:04:844
content: LastPrice LastTradeQty Context
         LastTradeQty  = 100
         LastPrice     = 34.96
CONTEXT:
MARKET_NASDAQ_UTP_SaleCondition:        @F
EV 511/500004           2013-08-21 15:54:05:333
content: LastPrice LastTradeQty Context
         LastTradeQty  = 100
         LastPrice     = 34.96
CONTEXT:
MARKET_NASDAQ_UTP_SaleCondition:        @
```

3.7. Market Wide Circuit Beaker

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 UTP 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>
```

4. Finding the Latest Information

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

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