S&P Capital IQ Real-Time Solutions

FeedOS™ Developer's Notice

CHIX AUSTRALIA – Feed Update

Reference n°: 20150409 – 17723 – 26213 (UPDATE 01 TO 20141204 – 17723 – 23530)

Effective as of: 13 April 2015*

Action required from users: MANDATORY ACTION

S&P CAPITAL IQ
McGRAW HILL FINANCIAL

* 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
FeedOS™ Developer's Notice: CHIX AUSTRALIA – Feed Update
Reference 20150409 – 17723 – 26213
April 09, 2015

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UPDATE OF THE CHIX AUSTRALIA MARKET DATA STREAM

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

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. FeedOS Technical Implementation
- 3. Finding the Latest Information.

1. Update Summary

Table 1 Current update summary

Notice Reference	20150409 – 17723 – 26213[i] (UPDATE 01 TO 20141204 – 17723 – 23530)
Exchanges	CHIX AUSTRALIA
Concerned MICs	CHIA
Internal Source ID	243
Effective Date	**2015-04-13**[*]
Impact	• Update of the Referential Tags • Update of the Quotation Tags • Changes to the Level1 Market Data Kinematics - OPEN & CLOSE • Microsecond Timestamp Precision on the Level1 Market Data
Action required	**MANDATORY ACTION**

i. The red bars in the left margin highlight content that has been added or changed since the previous release of this document.

2. FeedOS Technical Implementation

Effective Monday, **April 13[*] 2015,** S&P Capital IQ Real-Time Solutions enhances the referential and quotation data, and updates the Level1 Market Data Kinematics to accommodate the information disseminated on the CHIX AUSTRALIA 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 Level1 Market Data Kinematics - OPEN & CLOSE
- 2.4. Microsecond Timestamp Precision on the Level1 Market Data.

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 CHIX AUSTRALIA market data stream:

Table 2 Referential tags added on the CHIX AUSTRALIA market data stream

Tag Name	Numeric ID	Type
`DynamicVariationRange`	9553	Float64
`StaticVariationRange`	9554	Float64

2.1.1. DynamicVariationRange

The values of the referential tag **DynamicVariationRange** conveyed on the CHIX AUSTRALIA market data stream are disseminated via FeedOS data stream in *Referential* to indicate the maximum permitted value around the dynamic price.

The **Dynamic Range** defines the maximum permitted variation around the *Dynamic Price* (in both directions) and it is expressed as a percentage. The *Dynamic Price* is the price fixed *in the last trade*, and may be the result either of an auction (in which case it will be the same as the static price) or of a trade made on the open market. The Dynamic Range remains in force only while the market is open and during the closing auction.

S&P Capital IQ Real-Time Solutions disseminates only the variation ranges related to the continuous trading session.

* 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 FeedOS™ project manager.

FeedOS implementation of the tag `DynamicVariationRange` is described in the following table:

Table 3 DynamicVariationRange – technical implementation in FeedOS

Component	Value	Description
Tag Name	`DynamicVariationRange`	FeedOS tag name.
Numeric ID	`9553`	FeedOS 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 / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific percentile value***, detailing the maximum permitted value around the dynamic price.

2.1.2. StaticVariationRange

The values of the referential tag **StaticVariationRange** conveyed on the CHIX AUSTRALIA market data stream are disseminated via FeedOS data stream in *Referential* to indicate the maximum permitted value around the static price.

The **Static Range** defines the maximum permitted variation around the *Static Price* (in both directions) and it is expressed as a percentage. The *Static Price* is the price fixed *at the last auction* (the auction allocation price). The Static Range remains in force during the entire session.

S&P Capital IQ Real-Time Solutions disseminates only the variation ranges related to the continuous trading session.

FeedOS implementation of the tag `StaticVariationRange` is described in the following table:

Table 4 StaticVariationRange – technical implementation in FeedOS

Component	Value	Description
Tag Name	`StaticVariationRange`	FeedOS tag name.
Numeric ID	`9554`	FeedOS 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 / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific percentile value***, detailing the maximum permitted value around the static price.

Referential Data Sample

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

```
instr # 478/1192 = 1002439848
    PriceCurrency                string{AUD}
    Symbol                       string{RIO}
    Description                  string{RIO TINTO FPO [RIO]}
    SecurityType                 string{CS}
    FOSMarketId                  CHIA
    CFICode                      string{ESXXXX}
    RoundLot                     float64{1}
    InternalCreationDate         Timestamp{2015-03-11 10:14:06:240}
    InternalModificationDate     Timestamp{2015-03-11 10:14:06:240}
    InternalSourceId             uint16{243}
    InternalEntitlementId        CHA
    LocalCodeStr                 string{RIO}
    ForeignFOSMarketId           XASX
    ForeignMarketId              string{XASX}
    ISIN                         string{AU000000RIO1}
    PriceIncrement_dynamic_TableId      uint32{3473508}
    OperatingMIC                 string{CHIA}
    DynamicVariationRange        float64{8}
    StaticVariationRange         float64{5}
```

2.2. Changes to the Quotation Data

S&P Capital IQ Real-Time Solutions **introduces** the quotation tags below to accommodate the information disseminated on the CHIX AUSTRALIA market data stream:

Table 5 Quotation tags added on the CHIX AUSTRALIA market data stream

Tag Name	Numeric ID	Type
`InternalDailyClosingPriceType`	9155	Char

2.2.1. InternalDailyClosingPriceType

The values of the quotation tag **InternalDailyClosingPriceType** conveyed on the CHIX AUSTRALIA market data stream are disseminated via FeedOS 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.

FeedOS implementation of the tag `InternalDailyClosingPriceType` is described in the table below (the values disseminated as of 2015-04-13 are highlighted in `green`):

Table 6 InternalDailyClosingPriceType – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`InternalDailyClosingPriceType`	FeedOS tag name.
Numeric ID	`9155`	FeedOS 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	*`[Internal Specific Value]`*	An ***internal specific value***, detailing the type of daily closing price, as described below.
Possible Values	0	**Undefined**
	a	**Official Close** – Explicit closing price value calculated and distributed by an exchange for the main trading session of a given trading day.
	b	**Official Indicative** – Exchange has provided an indicative price and marked it as indicative, however no trading activity is observed.
	c	**Official Carry Over** – Explicit Closing price value from a previous trading day carried forward by the exchange to the given trading day.
	d	**Last Price** – Final price disseminated by the exchange for the main trading session or dissemination period of a given trading day (for indices).
	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.
	z	**Manual** – Price disseminated manually (in case of production correction).

Quotation Data Sample

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

```
InstrumentStatusL1
-- 478/1192
        BID: 57.19      0       *NO ORDER*
        ASK: 57.43      0       *NO ORDER*
        LastPrice                       float64{57.33}
        LastTradeQty                    float64{47}
        DailyHighPrice                  float64{57.42}
        DailyLowPrice                   float64{57.1}
        DailyTotalVolumeTraded          float64{66455}
        DailyTotalAssetTraded           float64{3803742.00499999}
        LastTradePrice                  float64{57.33}
        LastTradeTimestamp              Timestamp{2015-03-13 04:59:19:029}
        InternalDailyOpenTimestamp      Timestamp{2015-03-12 23:00:00:068}
        InternalDailyCloseTimestamp     Timestamp{2015-03-13 05:20:00:180}
        InternalDailyHighTimestamp      Timestamp{2015-03-12 23:59:03:682}
        InternalDailyLowTimestamp       Timestamp{2015-03-13 00:51:51:728}
        InternalPriceActivityTimestamp  Timestamp{2015-03-13 05:20:00:180}
        TradingStatus                   18=NotAvailableForTrading
        LastOffBookTradePrice           float64{57.265}
        LastOffBookTradeQty             float64{1}
        LastOffBookTradeTimestamp       Timestamp{2015-03-13 04:58:01:070}
        DailyOpeningPrice               float64{57.285}
        DailyClosingPrice               float64{57.33}
        PreviousDailyTotalVolumeTraded  float64{96662}
        PreviousDailyTotalAssetTraded   float64{5569977.385}
        PreviousDailyClosingPrice       float64{57.6}
        PreviousBusinessDay             Timestamp{2015-03-12}
        CurrentBusinessDay              Timestamp{2015-03-13}
        DailyTotalOffBookVolumeTraded   float64{12172}
        DailyTotalOffBookAssetTraded    float64{696724.165}
        InternalDailyClosingPriceType   char{d}
        PriceActivityMarketTimestamp    Timestamp{2015-03-13 05:20:00}
```

2.3. Changes to the Level1 Market Data Kinematics - OPEN & CLOSE

The following sections details the changes to the Level1 Market data Kinematics:

- 2.3.1. Changes to the OPEN Kinematics
- 2.3.2. Changes to the CLOSE Kinematics.

2.3.1. Changes to the OPEN Kinematics

In the Level1 Market Data Kinematics before 2015-04-13, the exchange sent the Trading Status `17=ReadyToTrade` before the OPEN signal, each time a trade occurred, 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    20:49:05:429 1002439848   8.9044  100000  *     *       *      *       f
TradeID=160000001,MARKET_CHIX_ExecutionType=M
VU    20:49:05:429 1002439848   TradingStatus=17
TE    20:49:14:349 1002439848   8.9107  100000  *     *       *      *       f
TradeID=160000002,MARKET_CHIX_ExecutionType=M
VU    20:49:14:349 1002439848   TradingStatus=17
SI    23:00:00:000 1002439848   OPEN    *
TE    23:00:00:000 1002439848   *       *       *     *       *      *       o
TE    23:00:01:023 1002439848   *       *       8.86  5162@1  *      *
TE    23:00:01:027 1002439848   *       *       *     *       9.06   5162@1
```

In the Level1 Market Data Kinematics after 2015-04-13, the exchange will simultaneously send the Trading Status and the OPEN signal:

```
"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    20:49:05:429 1002439848   8.9044  100000  *     *       *      *       f
TradeID=160000001,MARKET_CHIX_ExecutionType=77
TE    20:49:14:349 1002439848   8.9107  100000  *     *       *      *       f
TradeID=160000002,MARKET_CHIX_ExecutionType=77
SI    23:00:00:000 1002439848   OPEN    *
TE    23:00:00:000 1002439848   *       *       *     *       *      *       o
VU    23:00:00:000 1002439848   TradingStatus=17
TE    23:00:01:023 1002439848   *       *       8.86  5162@1  *      *
TE    23:00:01:027 1002439848   *       *       *     *       9.06   5162@1
```

2.3.2. Changes to the CLOSE Kinematics

In the Level1 Market Data Kinematics before 2015-04-13, the exchange simultaneously sent the CLOSE signal and the Trading Status `16=TradeDisseminationTime` at 16:12 (Sydney Local Time). The Trading Status `16=TradeDisseminationTime` remained in effect until 16:20 (Sydney Local Time), when the market changed it to `18=NotAvailableForTrading`, 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   05:00:00:079   1002439848    *        *        !      0      *      *
SI   05:12:59:000   1002439848    CLOSE    27.96
TE   05:12:59:000   1002439848    27.96    *        *      *      *      *      C
VU   05:12:59:000   1002439848    TradingStatus=16
TE   05:13:40:316   1002439848    27.9663  44105    *      *      *      *      f
TradeID=140170098, 16300=B
VU   05:20:00:000   1002439848    TradingStatus=18
```

In the Level1 Market Data Kinematics after 2015-04-13, the exchange will opened the Market-On-Close (MOC) session at 16:12 (Sydney Local Time), by setting the Trading Status `16=TradeDisseminationTime`, which will remain in effect until 16:20 (Sydney Local Time), when the market will simultaneously send the CLOSE signal and change the Trading Status to `18=NotAvailableForTrading`, 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"


VU   05:11:00:263   1002439848    DailyClosingPrice=34.68 InternalDailyClosingPriceType=a
TE   05:11:00:263   1002439848    34.68  307  *    *    *    *
TradeCondition=AJ=official_closing_price,TradeID=140066168
VU   05:12:59:000   1002439848    TradingStatus=16
SI   05:20:00:000   1002439848    CLOSE  *
TE   05:20:00:000   1002439848    *      *    *    *    *    *    C
VU   05:20:00:000   1002439848    TradingStatus=18
```

2.4. Microsecond Timestamp Precision on the Level1 Market Data

Effective 2015-04-13, the server timestamps will display microsecond units on the Level1 Market Data, as shown in the example below (highlighted in `green`):

```
"TE (TradeEvent) : MARKET_TIME INSTRUMENT LAST_PRICE TRADE_QTY BID_PRICE BID_QTY ASK_PRICE
ASK_QTY *CONTENT_MASK* *FLAGS*"

TE    14:06:20:564.560    1002439848    *    *    40    1800@9    *    *
TE    14:06:23:282.347    1002439848    *    *    40    1600@8    *    *
TE    14:06:23:338.497    1002439848    *    *    40    1400@7    *    *
```

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.