S&P Capital IQ Real-Time Solutions

FeedOS™ Developer's Notice

SWX – Feed Update

Reference n°: 20150313 – 24441 – 25605

Effective as of: 30 March 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: SWX – Feed Update
Reference 20150313 – 24441 – 25605
March 17, 2015

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UPDATE OF THE SWX MARKET DATA STREAM

To reflect the changes caused by the dissemination of new values on the SWX 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

Table 1 Current update summary

Notice Reference	20150313 – 24441 – 25605
Exchanges	SWX
Concerned MICs	XSWX, XVTX, LIQU, XQMH
Internal Source ID	29
Effective Date	**2015-03-30***
Impact	• Update of the Referential Tags • Changes to the Level 1 Market Data Kinematics – LastAuctionPrice Reset • Microsecond Timestamp Precision on the Level1 Market Data
Action required	**MANDATORY ACTION** - see sections: • 2.1.1. SecurityType • 2.1.2. CFICode • 2.2. Changes to the Level1 Market Data Kinematics – LastAuctionPrice Reset.

2. FeedOS Technical Implementation

Effective Monday, **March 30*** **2015,** S&P Capital IQ Real-Time Solutions enhances the referential data and the Level1 Market Data Kinematics, to accommodate the information disseminated on the SWX market data stream, as described below:

- 2.1. Changes to the Referential Data
- 2.2. Changes to the Level1 Market Data Kinematics – LastAuctionPrice Reset
- 2.3. Microsecond Timestamp Precision on the Level1 Market Data.

2.1. Changes to the Referential Data

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

Table 2 Referential tags disseminating updated values on the SWX market data stream

Tag Name	Numeric ID	Type
SecurityType	167	String
CFICode	461	String
MarketSegmentID and MarketSegmentDesc	1300 and 1396	String
OperatingMIC	9533	String

2.1.1. SecurityType

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

FeedOS implementation of the tag `SecurityType` is described in the table below (existing values are in `black`, newly added values are in `green`):

Table 3 SecurityType – technical implementation in FeedOS

Component	Value	Description
Tag Name	SecurityType	FeedOS tag name.
Numeric ID	167	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	String	String data type.
Format	*[Exchange Specific Value]*	An ***exchange specific value***, detailing the type of security.
Possible Values	COFP	Certificate of Participation
	CS	Common Stock
	GO	General Obligation

* This is the proposed day for the update of the standard version of the feed handler. For dedicated feed handlers, the date and Source IDs may differ. For the actual day when the changes to your custom feed handler will take effect, please contact your FeedOS™ project manager.

Table 3 SecurityType – technical implementation in FeedOS (Continued)

Component	Value	Description
Possible Values	MF	Mutual Fund
	NONE	None
	PS	Preferred Stock
	WAR	Warrant

2.1.2. CFICode

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

FeedOS implementation of the tag `CFICode` is described in the table below (existing values are in `black`, newly added values are in `green`):

Table 4 CFICode – technical implementation in FeedOS

Component	Value	Description
Tag Name	CFICode	FeedOS tag name.
Numeric ID	461	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	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
	DXXXXX	Debts
	EMXXXX	Equities - Others
	EPXXXX	Equities - Preferred Shares
	ESXXXR	Equities - Shares - Registered
	ESXXXX	Equities - Shares
	EUXXXX	Equities - Units
	EXXXXB	Equities - Bearer
	EXXXXX	Equities
	MRXXXX	Other - Interest Rates
	RWCXCX	Rights - Warrants - Currencies - Call
	RWCXPX	Rights - Warrants - Currencies - Put
	RWTXCX	Rights - Warrants - Commodities - Call
	RWTXPX	Rights - Warrants - Commodities - Put
	RWXXCX	Rights - Warrants - Call
	RWXXPX	Rights - Warrants - Put
	RXXXCX	Rights - Call
	XXXXXX	Undefined

The example below shows the possible combinations of `SecurityTypes` and `CFICodes`, before and after the migration day (please note that additional combinations may be available, as the exchange could introduce new instruments):

```
BEFORE 2015-03-30
{ XSWX COFP EMXXXX }
{ XSWX CS   ESXXXR }
{ XSWX CS   EXXXXX }
{ XSWX GO   DBXXXX }
{ XSWX GO   DCXXXX }
{ XSWX MF   EUXXXX }
{ XSWX NONE DBXXXX }
{ XSWX NONE DXXXXX }
{ XSWX NONE EXXXXB }
{ XSWX NONE EXXXXX }
{ XSWX NONE RXXXCX }
{ XSWX NONE XXXXXX }
{ XVTX COFP EMXXXX }
{ XVTX CS   ESXXXR }
{ XVTX NONE EMXXXX }
{ XVTX NONE EXXXXB }
{ LIQU NONE XXXXXX }
{ XQMH NONE MRXXXX }
{ XQMH WAR  RWCXCX }
{ XQMH WAR  RWCXPX }
{ XQMH WAR  RWTXCX }
{ XQMH WAR  RWTXPX }
{ XQMH WAR  RWXXCX }
{ XQMH WAR  RWXXPX }
```

```
AFTER 2015-03-30
{ XSWX COFP     EMXXXX }
{ XSWX CS       ESXXXR }
{ XSWX CS       ESXXXX }
{ XSWX CS       EXXXXX }
{ XSWX GO       DBXXXX }
{ XSWX GO       DCXXXX }
{ XSWX MF       EUXXXX }
{ XSWX NONE     DBXXXX }
{ XSWX NONE     DXXXXX }
{ XSWX NONE     EXXXXB }
{ XSWX NONE     EXXXXX }
{ XSWX NONE     MRXXXX }
{ XSWX NONE     RXXXCX }
{ XSWX NONE     XXXXXX }
{ XVTX COFP     EMXXXX }
{ XVTX CS       ESXXXR }
{ XVTX NONE     EMXXXX }
{ XVTX NONE     EXXXXB }
{ LIQU CS       ESXXXX }
{ LIQU NONE     XXXXXX }
{ LIQU PS       EPXXXX }
{ XQMH NONE     MRXXXX }
{ XQMH WAR      RWCXCX }
{ XQMH WAR      RWCXPX }
{ XQMH WAR      RWTXCX }
{ XQMH WAR      RWTXPX }
{ XQMH WAR      RWXXCX }
{ XQMH WAR      RWXXPX }
```

2.1.3. MarketSegmentID and MarketSegmentDesc

The values of the referential tags **MarketSegmentID** and **MarketSegmentDesc** conveyed on the SWX market data stream are disseminated via FeedOS data stream in *Referential* to detail the ID of the market segment and its description.

FeedOS implementation of the tags `MarketSegmentID` and `MarketSegmentDesc` is described below (existing values are in `black`, removed values are in ~~`crossed out red`~~, newly added values are in `green`):

Table 5 MarketSegmentID and MarketSegmentDesc – technical implementation in QuantFEED®

Component	Value		Description
Tag Name	`MarketSegmentID`	`MarketSegmentDesc`	FeedOS tag name.
Numeric ID	1300	1396	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	`String`	`String`	String data type.
Format	*`[Exchange Specific Value]`*	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the ID of the market segment and its description.
Possible Values	~~`<EMPTY>`~~	~~`<EMPTY>`~~	
	~~`AF`~~	~~`Funds and ETF`~~	
	~~`HS`~~	~~`Main Market`~~	

Table 5 MarketSegmentID and MarketSegmentDesc – technical implementation in QuantFEED® (Continued)

Component	Value	Description
Possible Values	~~IA~~	~~International Bonds~~
	~~IG~~	~~Real Estate~~
	~~IV~~	~~Investment Companies~~
	~~LC~~	~~Local Caps~~
	~~SP~~	~~SWX Sponsored Segment~~
	26	Blue Chip Shares
	580	SIX Structured Products
	581	International Bonds
	582	International Bonds Min Denom
	583	International Bonds Convertible
	584	ETF
	585	ETF on Swiss Confederation Bonds
	588	ETP
	589	Swiss Confederation Bonds CHF
	590	Bonds CHF
	591	Mid-/Small-Cap Shares
	592	Secondary Listing Shares
	594	Investment Funds
	596	Convertible and Warrant Bonds CHF
	597	Separate Trading Lines
	612	Sponsored Funds
	613	Sponsored Foreign Shares

2.1.4. OperatingMIC

The values of the referential tag **OperatingMIC** conveyed on the SWX market data stream are disseminated via FeedOS data stream in *Referential* to specify the parent MIC.

FeedOS implementation of the tag `OperatingMIC` is described in the table below (existing values are in `black`, newly added values are in `green`):

Table 6 OperatingMIC – technical implementation in FeedOS

Component	Value	Description
Tag Name	`OperatingMIC`	FeedOS tag name.
Numeric ID	`9533`	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	`String`	String data type.
Format	***`[Exchange Specific Value]`***	An ***exchange specific value***, specifying the parent MIC.
Possible Values	`LIQU`	Liquidnet Systems
	`XQMH`	SIX Structured Products Exchange AG
	`XSWX`	Swiss Exchange

Referential Data Sample

Below are several examples showing the current implementation of the updated (in blue) referential tags:

```
instr # 256/512845 = 537383757
    PriceCurrency               string{CHF}
    Symbol                      string{ABBNE}
    Issuer                      string{ABB Ltd}
    Description                 string{ABB LTD N 2. LINIE}
    SecurityType                string{CS}
    FOSMarketId                 XSWX
    PriceType                   uint8{2}
    CFICode                     string{ESXXXR}
    RoundLot                    float64{1}
    MinTradeVol                 float64{0}
    SecuritySubType             string{Registered Share}
    DatedDate                   Timestamp{2014-09-16}
    SecurityGroup               string{2110}
    MarketSegmentID             string{597}
    MarketSegmentDesc           string{Separate Trading Lines}
    InternalCreationDate        Timestamp{2014-09-15 00:00:05:405}
    InternalModificationDate    Timestamp{2015-03-04 14:44:35:357}
    InternalSourceId            uint16{29}
    InternalEntitlementId       SWX
    InternalMagic               string{Mid & Small Cap Shares}
    LocalCodeStr                string{CH0253301128_CHF}
    ISIN                        string{CH0253301128}
    Telekurs_Valor              string{25330112}
    PriceIncrement_dynamic_TableId  uint32{3342436}
    SecurityTradingId           string{3232940}
    OperatingMIC                string{XSWX}
    CCP_Eligible                bool{False}
    MARKET_SWX_IssuerCountry    string{CH}
    MARKET_SWX_TradingSessionID string{ABdI}
    MARKET_SWX_ListingStateCode string{LI}
    MARKET_SWX_ListingStateDesc string{Listed}

***

instr # 491/505383 = 1030207015
    PriceCurrency               string{GBX}
    Symbol                      string{ERET_p.UKE}
    Issuer                      string{London Stock Exchange}
    Description                 string{Matrix European Real Estate In}
    SecurityType                string{PS}
    FOSMarketId                 LIQU
    CFICode                     string{EPXXXX}
    SecuritySubType             string{SLS Eligible}
    InternalCreationDate        Timestamp{2014-07-14 00:00:05:551}
    InternalModificationDate    Timestamp{2015-03-11 15:26:19:403}
    InternalSourceId            uint16{29}
    InternalEntitlementId       int32{1093}
    LocalCodeStr                string{GG00BNJZV473_GBX}
    ForeignFOSMarketId          XLON
    ISIN                        string{GG00BNJZV473}
    OperatingMIC                string{LIQU}
    MARKET_SWX_IssuerCountry    string{United Kingdom}
```

2.2. Changes to the Level1 Market Data Kinematics – LastAuctionPrice Reset

In the kinematics before 2015-03-30, the `LastAuctionPrice` and `LastAuctionVolume` were reset at the end of the Auction Phase, 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..."

VU   07:57:17:933  537371421   LastAuctionPrice=40.25  LastAuctionVolume=2815
VU   07:59:54:435  537371421   LastAuctionVolume=3077
VU   07:59:59:521  537371421   LastAuctionVolume=3148
SI   08:01:01:016  537371421   OPEN    *
TE   08:01:01:016  537371421   *       *       *       *       *       *       O
VU   08:01:01:016  537371421   MARKET_SWX_TradingSessionSubID=2        TradingStatus=17
TE   08:01:01:040  537371421   *       *       40.25   554@1   40.3    150@1
VU   08:01:01:040  537371421   LastAuctionPrice=?      LastAuctionVolume=?
TE   08:01:01:000  537371421   40.25   150     *       *       *       *       HL
MARKET_SWX_TradingPhase=2
VU   08:01:01:000  537371421   DailyOpeningPrice=40.25
TE   08:01:01:000  537371421   40.25   100     *       *       *       *
MARKET_SWX_TradingPhase=2
TE   08:01:01:000  537371421   40.25   2       *       *       *       *
MARKET_SWX_TradingPhase=2
TE   08:01:01:000  537371421   40.25   22      *       *       *       *
MARKET_SWX_TradingPhase=2
```

In the kinematics after 2015-03-30, the `LastAuctionPrice` and `LastAuctionVolume` will be reset at the end of the Auction Phase. The `LastAuctionPrice` will be resent with a new value, when provided by the exchange. Moreover, the `LastAuctionPrice` will be available in the snapshot during the trading day, but the `LastAuctionVolume` will be empty, 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..."

VU   07:57:17:933.323  537371421   LastAuctionPrice=40.25  LastAuctionVolume=2815
VU   07:59:54:435.525  537371421   LastAuctionVolume=3077
VU   07:59:59:521.728  537371421   LastAuctionVolume=3148
SI   08:01:01:016.121  537371421   OPEN    *
TE   08:01:01:016.123  537371421   *       *       *       *       *       *       O
VU   08:01:01:016.180  537371421   MARKET_SWX_TradingSessionSubID=2        TradingStatus=17
TE   08:01:01:040.254  537371421   *       *       40.25   554@1   40.3    150@1
VU   08:01:01:040.287  537371421   LastAuctionPrice=?      LastAuctionVolume=?
TE   08:01:01:000.321  537371421   40.25   150     *       *       *       *       HL
MARKET_SWX_TradingPhase=2
VU   08:01:01:000.457  537371421   DailyOpeningPrice=40.25 LastAuctionPrice=40.25
TE   08:01:01:000.501  537371421   40.25   100     *       *       *       *
MARKET_SWX_TradingPhase=2
TE   08:01:01:000.578  537371421   40.25   2       *       *       *       *
MARKET_SWX_TradingPhase=2
TE   08:01:01:000.648  537371421   40.25   22      *       *       *       *
MARKET_SWX_TradingPhase=2
```

2.3. Microsecond Timestamp Precision on the Level1 Market Data

Effective 2015-03-30, 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   15:01:01:000.578  537371421   40.25   18      *       *       *       *
TE   15:02:06:028.392  537371421   40.25   52      *       *       *       *
```

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.