S&P Capital IQ Real-Time Solutions

FeedOS™ Feed Description

BVMF Feed

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S&P Capital IQ Real-Time Solutions
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Reference 20150219 – 24099 – 25452
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FEEDOS™ BVMF FEED DESCRIPTION

As part of S&P Capital IQ Real-Time Solutions FeedOS documentation, this feed description provides you with details about the types of data broadcast on the BVMF market data stream, their possible values and current FeedOS technical implementation.

The topics this feed description covers include:

- 1. Referential Data
- 2. Quotation Data
- 3. Official Closing Price
- 4. Special Behavior
- 5. Finding the Latest Information.

1. Referential Data

The following sections describe the characteristics of the referential data on the BVMF market data stream, in terms of:

- 1.1. Available Markets and Branches
- 1.2. Types of Instruments
- 1.3. Specific Referential Tags.

1.1. Available Markets and Branches

This section details the list of markets and branches available on the BVMF market data stream:

- 1.1.1. BVMF Markets
- 1.1.2. BVMF Branches.

1.1.1. BVMF Markets

The BVMF market data stream broadcasts informations about the following markets:

Table 1 List of markets available on BVMF market data stream

FeedOS Market ID	Market
BVMF	BM&F BOVESPA S.A. Bolsa de Valores Mercadorias e Futuros

The following example shows the list of markets available on the BVMF market data stream and their IDs, returned by the command `dumps`:

```
MARKETS
market # 496    CC=BR/BRAZIL/SAO PAULO,DESCR=BM&FBOVESPA S.A. - BOLSA DE VALORES -MERCADORIAS
E FUTUROS,WEB=www.bmfbovespa.com.br
    MIC = BVMF
    TimeZone = America/Sao_Paulo
    Country = BR
    NbMaxInstruments = 2000000
```

1.1.2. BVMF Branches

The example below shows the list of branches available on the BVMF market data stream, returned by the command `dumps`. Each branch displays the following details: `FOSMarketID`, `SecurityType`, `CFICode` and `Quantity` (of instruments):

```
BRANCHES
    { BVMF CS   EMXXXR } qty: 1254
    { BVMF CS   EMXXXX } qty: 2059
    { BVMF CS   EPNEFR } qty: 542
    { BVMF CS   EPNGXR } qty: 132
    { BVMF CS   EPNNXR } qty: 1
    { BVMF CS   ESVUFR } qty: 859
    { BVMF CS   EUCXSR } qty: 14
    { BVMF CS   EUOGSR } qty: 16
    { BVMF CS   EUOMSR } qty: 34
    { BVMF FUT  FCAPSX } qty: 71
    { BVMF FUT  FCSPSX } qty: 11
    { BVMF FUT  FFCCSX } qty: 139
    { BVMF FUT  FFDCSX } qty: 3
    { BVMF FUT  FFFCSX } qty: 209
    { BVMF FUT  FFICSX } qty: 49
    { BVMF FUT  FXXXXX } qty: 88
    { BVMF MLEG FXXXXX } qty: 541
    { BVMF MLEG MCMUXX } qty: 31
    { BVMF MLEG MMXXXX } qty: 1944
    { BVMF MLEG OCEMCS } qty: 771
    { BVMF MLEG OPEMCS } qty: 771
    { BVMF NONE MMXXXX } qty: 68
    { BVMF NONE MRIXXX } qty: 49
    { BVMF NONE RSPXXR } qty: 2
    { BVMF NONE RSSXXE } qty: 30
    { BVMF NONE XXXXXX } qty: 13
    { BVMF OPT  OCAACS } qty: 431
    { BVMF OPT  OCAICS } qty: 6
    { BVMF OPT  OCAMCS } qty: 685
    { BVMF OPT  OCASCS } qty: 3159
    { BVMF OPT  OCASPS } qty: 17048
    { BVMF OPT  OCECCS } qty: 270
    { BVMF OPT  OCEFCS } qty: 144
    { BVMF OPT  OCEICS } qty: 489
    { BVMF OPT  OCEMCS } qty: 1355
    { BVMF OPT  OCESCS } qty: 572
    { BVMF OPT  OCESPS } qty: 2142
    { BVMF OPT  OPAACS } qty: 430                                          (see next page)
```

```
    { BVMF OPT  OPAMCS } qty: 558
    { BVMF OPT  OPECCS } qty: 271
    { BVMF OPT  OPEFCS } qty: 143
    { BVMF OPT  OPEICS } qty: 494
    { BVMF OPT  OPEMCS } qty: 1457
    { BVMF OPT  OPESCS } qty: 2140
    { BVMF OPT  OPESPS } qty: 19190
```

1.2. Types of Instruments

The following sections describe the instruments available on the BVMF market data stream, according to their type:

- 1.2.1. Equities
- 1.2.2. Futures
- 1.2.3. Indices
- 1.2.4. Multilegs
- 1.2.5. Options.

1.2.1. Equities

The sample below illustrates the details of an equity:

```
instr # 496/87530 = 1040274922
    PriceCurrency               string{BRL}
    Symbol                      string{PATI9}
    Description                 string{PANATLANTICAON  REC}
    SecurityType                string{CS}
    FOSMarketId                 BVMF
    ContractMultiplier          float64{1}
    CFICode                     string{EMXXXR}
    RoundLot                    float64{100}
    SecuritySubType             string{Ordinary Receipts}
    LotType                     uint8{2}
    SecurityGroup               string{01}
    InternalCreationDate        Timestamp{2014-07-10 03:42:26:205}
    InternalModificationDate    Timestamp{2014-10-02 09:00:00:318}
    InternalHideFromLookup      bool{True}
    InternalSourceId            uint16{111}
    InternalAggregationId       uint16{111}
    InternalEntitlementId       int32{1166}
    LocalCodeStr                string{E_3820818}
    ISIN                        string{BRPATIR12OR8}
    PriceIncrement_static       float64{0.01}
```

1.2.2. Futures

The sample below illustrates the details of a future:

```
instr # 496/88751 = 1040276143
    PriceCurrency               string{BRL}
    Symbol                      string{BGIK14}
    Description                 string{BOI GORDO R$}
    SecurityType                string{FUT}
    StdMaturity                 string{201405}
    FOSMarketId                 BVMF
    ContractMultiplier          float64{330}
    CFICode                     string{FCAPSX}
    RoundLot                    float64{1}
    SecurityGroup               string{K1}
    InternalCreationDate        Timestamp{2013-05-10 20:13:35:945}
    InternalModificationDate    Timestamp{2014-06-02 03:02:36:287}
    InternalHideFromLookup      bool{True}
    InternalSourceId            uint16{111}
    InternalAggregationId       uint16{111}
    InternalMagic               string{730846}
    LocalCodeStr                string{7308462}
    ISIN                        string{BRBMEFBGI3H1}
    PriceIncrement_static       float64{0.01}
    UnderlyingFOSMarketId       BVMF
    UnderlyingLocalCodeStr      string{9800078}
    UnderlyingFOSInstrumentCode uint32{1040188557}
    MaturityYear                uint16{2014}
    MaturityMonth               uint8{5}
    MaturityDay                 uint8{30}
```

1.2.3. Indices

The sample below illustrates the details of an index:

```
instr # 496/28099 = 1040215491
    PriceCurrency               string{BRL}
    Symbol                      string{IFIX11}
    Description                 string{IND FDO IMOBIFI}
    SecurityType                string{NONE}
    FOSMarketId                 BVMF
    ContractMultiplier          float64{1}
    CFICode                     string{MRIXXX}
    RoundLot                    float64{10}
    SecuritySubType             string{Tradeable Index}
    LotType                     uint8{2}
    SecurityGroup               string{9A}
    InternalCreationDate        Timestamp{2014-11-06 22:00:02:582}
    InternalModificationDate    Timestamp{2014-11-06 22:00:02:582}
    InternalSourceId            uint16{111}
    InternalAggregationId       uint16{111}
    InternalEntitlementId       int32{1166}
    LocalCodeStr                string{E_3804523}
    ISIN                        string{BRIFIXINDM10}
    PriceIncrement_static       float64{0.01}
```

1.2.4. Multilegs

The sample below illustrates the details of a multileg:

```
instr # 496/91660 = 1040279052
    PriceCurrency               string{BRL}
    Symbol                      string{FROV16}
    Description                 string{FRA DE COMPROM.}
    SecurityType                string{MLEG}
    StdMaturity                 string{201610}
    FOSMarketId                 BVMF
    ContractMultiplier          float64{0.5}
    CFICode                     string{FXXXXX}
    NbLegs                      uint8{2}
    RoundLot                    float64{10}
    SecurityGroup               string{F6}
    InternalCreationDate        Timestamp{2013-05-27 04:36:01:583}
    InternalModificationDate    Timestamp{2013-12-27 08:00:00:785}
    InternalHideFromLookup      bool{True}
    InternalSourceId            uint16{111}
    InternalAggregationId       uint16{111}
    InternalMagic               string{274015}
    LocalCodeStr                string{2740156}
    ISIN                        string{BRBMEFFRO0C3}
    PriceIncrement_static       float64{0.01}
    MaturityYear                uint16{2016}
    MaturityMonth               uint8{10}
    MaturityDay                 uint8{3}
    LegFOSInstrumentCode        uint32{1040277396}
    LegFOSInstrumentCode_1      uint32{1040277324}
```

1.2.5. Options

The sample below illustrates the details of an option:

```
instr # 496/45258 = 1040232650
    PriceCurrency               string{BRL}
    Symbol                      string{BOVAD51E}
    Description                 string{BOVA  FM    CI   51,00}
    SecurityType                string{OPT}
    StdMaturity                 string{201504}
    StrikePrice                 float64{51}
    FOSMarketId                 BVMF
    ContractMultiplier          float64{1}
    CFICode                     string{OCAMCS}
    RoundLot                    float64{100}
    SecuritySubType             string{Traceable ETF}
    StrikeCurrency              string{BRL}
    LotType                     uint8{2}
    SecurityGroup               string{42}
    InternalCreationDate        Timestamp{2015-02-16 02:09:55:590}
    InternalModificationDate    Timestamp{2015-02-16 02:09:55:590}
    InternalSourceId            uint16{111}
    InternalAggregationId       uint16{111}
    InternalEntitlementId       int32{1166}
    LocalCodeStr                string{E_4370052}
    ISIN                        string{BRBOVACTF003}
    PriceIncrement_static       float64{0.01}
    UnderlyingFOSMarketId       BVMF
    UnderlyingLocalCodeStr      string{E_3810165}
    UnderlyingFOSInstrumentCode uint32{1040195971}
    MaturityYear                uint16{2015}
    MaturityMonth               uint8{4}
    MaturityDay                 uint8{20}
```

1.3. Specific Referential Tags

The sections below describe specific referential tags available on the BVMF market data stream:

- 1.3.1. LotType (for Equities Only)
- 1.3.2. LocalCodeStr.

1.3.1. LotType (for Equities Only)

The values of the referential tag **LotType** conveyed on the BVMF market data stream are disseminated via FeedOS data stream in *Referential* to detail the type of lot.

FeedOS implementation of the values currently available for the tag `LotType` is described below:

Table 2 LotType – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`LotType`	FeedOS tag name.
Numeric ID	`1093`	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	`UInt8`	UInt8 data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the type of lot.
Possible Values	`1`	Odd Lot
	`2`	Round Lot
	`3`	Block Lot

1.3.2. LocalCodeStr

The values of the referential tag **LocalCodeStr** conveyed on the BVMF market data stream are disseminated via FeedOS data stream in *Referential* to specify the security local code.

FeedOS implementation of the values currently available for the tag `LocalCodeStr` is described in the table below:

Table 3 LocalCodeStr – technical implementation in FeedOS

Component	Value	Description
Tag Name	`LocalCodeStr`	FeedOS tag name.
Numeric ID	`9500`	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	`D_`*`[String]`*	Derivatives format.
	`E_`*`[String]`*	Equities format.
Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the security local code, based on the MarketID of the messages from the BVMF market data stream.

2. Quotation Data

The following sections describe the characteristics of the quotation data on the BVMF market data stream, in terms of:

- 2.1. Quotation Values
- 2.2. Trading Status
- 2.3. Specific Quotation Tags
- 2.4. MBL, MBO and BBO Data.

2.1. Quotation Values

The example below shows the possible values of an instrument on the BVMF market data stream:

```
InstrumentStatusL1
-- 496/15419
        BID: 0.01       0       *NO ORDER*
        ASK: 0.01       1480200000      @20
        LastPrice                       float64{0.01}
        LastTradeQty                    float64{10000000}
        DailyHighPrice                  float64{0.01}
        DailyLowPrice                   float64{0.01}
        DailyTotalVolumeTraded          float64{10000000}
        DailyTotalAssetTraded           float64{100}
        LastTradePrice                  float64{0.01}
        LastTradeTimestamp              Timestamp{2015-02-19 13:43:12:605}
        InternalDailyOpenTimestamp      Timestamp{2015-02-19 12:00:00:188}
        InternalDailyCloseTimestamp     Timestamp{2015-02-18 23:35:00:125}
        InternalDailyHighTimestamp      Timestamp{2015-02-19 13:43:12:601}
        InternalDailyLowTimestamp       Timestamp{2015-02-19 13:43:12:601}
        InternalPriceActivityTimestamp  Timestamp{2015-02-19 14:39:14:268}
        TradingStatus                   17=ReadyToTrade
        DailyOpeningPrice               float64{0.01}
        PreviousDailyTotalVolumeTraded  float64{89800000}
        PreviousDailyTotalAssetTraded   float64{898}
        PreviousDailyClosingPrice       float64{0.01}
        PreviousBusinessDay             Timestamp{2015-02-05}
        CurrentBusinessDay              Timestamp{2015-02-19}
        LastAuctionPrice                float64{0.01}
        LastAuctionVolume               float64{10000000}
        LastAuctionImbalanceSide        char{Q}
        LastAuctionImbalanceVolume      float64{1288200000}
        InternalLastAuctionTimestamp    Timestamp{2015-02-19 13:13:12:589}
```

For more details about the fields and tags available in quotation data type, and their possible values, see *FeedOS Quotation Tags Guide*.

2.2. Trading Status

Each time a modification of the trading status occurs, the values of the quotation tag **Trading Status** conveyed on the BVMF market data stream are disseminated via FeedOS'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.

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

Table 4 TradingStatus – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`TradingStatus`	FeedOS tag name.
Numeric ID	9100	FeedOS unique ID disseminated 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 characteristics of the trading status.
Possible Values	2	Trading Halt
	4	No-Open
	17	Ready to Trade
	18	Not Available for Trading
	21	Pre-Open

2.3. Specific Quotation Tags

The following sections describe additional, specific quotation tags available on the BVMF market data stream:

- 2.3.1. Trade Conditions.

2.3.1. Trade Conditions

The following subsections describe the trade conditions on the BVMF market data stream:

- 2.3.1.1. Trade Condition.

2.3.1.1. Trade Condition

Each time a trade occurs, the values of the quotation tag **Trade Condition** conveyed on the BVMF market data stream are disseminated via FeedOS data stream in *Context*:

- 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 `TradeCondition` is described in the table below:

Table 5 TradeCondition – technical implementation in FeedOS

Component	Value	Description
Tag Name	`TradeCondition`	FeedOS tag name.
Numeric ID	`277`	FeedOS unique ID broadcast 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***, detailing the conditions of a trade.
Possible Values	R	Opening Price
	X	Crossed
	L	Last Trade at the Same Price Indicator
	P	Imbalance More Buyers
	Q	Imbalance More Sellers
	U	Exchange Last

2.4. MBL, MBO and BBO Data*

The MBL and MBO books are full depth.

3. Official Closing Price

For the BVMF market, the closing price can be sent by the market. If it is not sent by the market, the last trade is used as the closing price. A correction of the closing price after the closing is handled can occur, if the stock is split. The settlement price is handled when provided by the market.

4. Special Behavior

The following sections detail the specific behavior on BVMF market data stream:

- 4.1. Level1 Market Data Kinematics – OPEN.

* The MBL, MBO and BBO data may not be included by default in your Level1 data subscription, but sold separately. Depending on your contract, additional terms, conditions and fees may apply. For more details about the subscription options, please contact S&P Capital IQ Real-Time Solutions.

4.1. Level1 Market Data Kinematics – OPEN

In the OPEN kinematics before 2014-09-01, the opening signal was sent when the market sent the OPEN message or after the first trade of an instrument, 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"

VU  05:33:07:555 1040437519  PreviousDailySettlementPrice=117.43
VU  09:29:20:990 1040437519  OpenInterest=12739
VU  11:55:00:026 1040437519  TradSesOpenTime=2014-03-17 12:00:00     TradingStatus=21
TE  11:59:00:418 1040437519  *       *       117.02  5@1     *       *
TE  11:59:13:837 1040437519  *       *       *       *       119     2@1
VU  12:00:00:015 1040437519  TradSesOpenTime=?       TradingStatus=17
TE  12:00:23:831 1040437519  *       *       *       *       118.44  22@1
TE  12:00:37:463 1040437519  *       *       117.25  59@1    *       *
TE  12:00:51:915 1040437519  *       *       *       *       118.4   8@1
TE  12:01:13:140 1040437519  *       *       117.5   2@1     *       *
TE  12:01:14:914 1040437519  *       *       *       *       118.3   100@1
TE  12:02:56:488 1040437519  *       *       117.65  1@1     *       *
SI  12:05:28:894 1040437519  OPEN    117.65
TE  12:05:28:894 1040437519  117.65  1       117.6   1@1     118.29  12@2    OH
Buyer=15,Seller=3,TradeID=1040
VU  12:05:28:894 1040437519  SessionVWAPPrice=117.32 DailyTotalVolumeTraded=660
TE  12:05:28:894 1040437519  117.6   1       117.55  59@1    *       *
Buyer=3,Seller=3,TradeID=1050
```

In the OPEN kinematics after 2014-09-01, the opening signal is sent when the market sends the OPEN message, after the first trade of an instrument or when the trading status of the instrument changes to `17=ReadyToTrade`, for the first time during the trading day, 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  04:29:46:181 1040437519  DailyTotalAssetTraded=103
VU  05:33:07:555 1040437519  PreviousDailySettlementPrice=117.43
VU  11:55:00:026 1040437519  TradSesOpenTime=2014-03-17 12:00:00     TradingStatus=21
TE  11:59:00:418 1040437519  *       *       117.02  5@1     *       *
TE  11:59:13:837 1040437519  *       *       *       *       119     2@1
SI  12:00:00:015 1040437519  OPEN    *
TE  12:00:00:015 1040437519  *       *       *       *       *       *       O
VU  12:00:00:015 1040437519  TradSesOpenTime=?       TradingStatus=17
TE  12:00:23:831 1040437519  *       *       *       *       118.44  22@1
TE  12:00:37:463 1040437519  *       *       117.25  59@1    *       *
TE  12:00:51:915 1040437519  *       *       *       *       118.4   8@1
TE  12:01:13:140 1040437519  *       *       117.5   2@1     *       *
TE  12:01:14:914 1040437519  *       *       *       *       118.3   100@1
TE  12:02:56:488 1040437519  *       *       117.65  1@1     *       *
TE  12:05:28:894 1040437519  117.65  1       117.6   1@1     118.29  12@2    H
Buyer=15,Seller=3,TradeID=1040
VU  12:05:28:894 1040437519  SessionVWAPPrice=117.32 DailyTotalVolumeTraded=660
TE  12:05:28:894 1040437519  117.6   1       117.55  59@1    *       *
Buyer=3,Seller=3,TradeID=1050
```

5. Finding the Latest Information

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

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