

S&P Capital IQ Real-Time Solutions

FeedOS™ Feed Description

BATS US Feed

Reference n°: 20150422 – 24473 – 25354 – 26380



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Reference 20150422 – 24473 – 25354 – 26380
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France Offices

52 Rue de la Victoire
75009 Paris
France
Tel: +33 (0) 1 73 02 32 11

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

UK Offices

20 Canada Square
Canary Wharf
London E14 5LH
United Kingdom
Tel: +44 (0) 203 107 1676

Singapore Offices

12 Marina Boulevard
#23-01 Marina Bay
Financial Centre Tower 3
Singapore 018982
Tel: +65 6530 6546

www.capitaliq.com

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FEEDOS™ BATS US 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 BATS US 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](#)
- [5. Finding the Latest Information.](#)

1. Referential Data

The following sections describe the characteristics of the referential data on the BATS US 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 BATS US market data stream:

- [1.1.1. Markets](#)
- [1.1.2. Branches.](#)

1.1.1. Markets

The BATS US market data stream broadcasts informations about the following markets:

Table 1 List of markets available on BATS US market data stream

FeedOS Market ID	Market
BATS	BATS US

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

```
MARKETS
market # 444      CC=US/UNITED STATES OF AMERICA/KANSAS CITY,DESCR=BATS
EXCHANGE,WEB=www.batstrading.com
  MIC = BATS
  TimeZone =
  Country =
  NbMaxInstruments = 1000000
```

1.1.2. Branches

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

```
BRANCHES
{ BATS CS   ESXXXX } qty: 7692
{ BATS MF   EUXXXX } qty: 1
{ BATS NONE EXXXXX } qty: 2
{ BATS NONE RXXXXX } qty: 4
{ BATS PS   EPXXXX } qty: 476
{ BATS WAR  RWXXXX } qty: 37
```

1.2. Types of Instruments

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

- [1.2.1. Equities](#)
- [1.2.2. Rights](#)
- [1.2.3. Warrants.](#)

1.2.1. Equities

The sample below illustrates the details of an equity:

```
instr # 444/750094 = 931885582
  PriceCurrency      string{USD}
  Symbol             string{HLTH}
  SecurityType       string{CS}
  FOSMarketId        BATS
  CFICode            string{ESXXXX}
  SecurityGroup       string{13}
  InternalCreationDate Timestamp{2015-04-20 11:45:01:618}
  InternalModificationDate Timestamp{2015-04-20 11:45:01:618}
  InternalSourceId    uint16{113}
  InternalEntitlementId int32{1009}
  LocalCodeStr        string{HLTH}
  ForeignFOSMarketId  XASE
  ForeignMarketId     string{XASE}
  PriceIncrement_dynamic_TableId uint32{2031716}
  UMTF                string{HLTH}
  OperatingMIC         string{BATS}
```

1.2.2. Rights

The sample below illustrates the details of a right:

```
instr # 444/750034 = 931885522
  PriceCurrency      string{USD}
  Symbol             string{TTMA}
  SecurityType       string{NONE}
  FOSMarketId        BATS
  CFICode            string{RXXXXX}
  SecurityGroup       string{27}
  InternalCreationDate Timestamp{2015-04-15 09:55:55:728}
  InternalModificationDate Timestamp{2015-04-15 09:55:55:728}
  InternalSourceId    uint16{113}
  InternalEntitlementId int32{1009}
  LocalCodeStr        string{TTMA}
  PriceIncrement_dynamic_TableId uint32{2031716}
  UMTF                string{TTMA}
  OperatingMIC         string{BATS}
```

1.2.3. Warrants

The sample below illustrates the details of a warrant:

```
instr # 444/759133 = 931894621
  PriceCurrency      string{USD}
  Symbol             string{WBS+}
  SecurityType       string{WAR}
  FOSMarketId        BATS
  CFICode            string{RWXXX}
  SecurityGroup       string{30}
  InternalCreationDate Timestamp{2015-04-15 09:55:55:908}
  InternalModificationDate Timestamp{2015-04-15 09:55:55:908}
  InternalSourceId    uint16{113}
  InternalEntitlementId int32{1009}
  LocalCodeStr        string{WBS+}
  PriceIncrement_dynamic_TableId uint32{2031716}
  UMTF                string{WBS+}
  OperatingMIC         string{BATS}
```

1.3. Specific Referential Tags

The following sections detail the specific referential tags available on the BATS US market data stream:

- [1.3.1. PriceCurrency](#)
- [1.3.2. ForeignFOSMarketId](#)

1.3.1. PriceCurrency

The values of the referential tag **PriceCurrency** conveyed on the BATS US market data stream are disseminated via FeedOS data stream in *Referential* to specify the currency of the price.

FeedOS implementation of the tag PriceCurrency is described in the table below:

Table 2 PriceCurrency – technical implementation in FeedOS

Component	Value	Description
Tag Name	PriceCurrency	FeedOS tag name.
Numeric ID	15	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	<i>[Exchange Specific Value]</i>	An <i>exchange specific value</i> , specifying the currency of the price.
Possible Values	USD	United States Dollar

1.3.2. ForeignFOSMarketId

The values of the referential tag **ForeignFOSMarketId** conveyed on the BATS US market data stream are disseminated via FeedOS data stream in *Referential* to internally specify the foreign market of a security.

FeedOS implementation of the tag `ForeignFOSMarketId` is described in the table below:

Table 3 ForeignFOSMarketId – technical implementation in FeedOS

Component	Value	Description
Tag Name	<code>ForeignFOSMarketId</code>	FeedOS tag name.
Numeric ID	9501	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	UInt16	UInt16 data type.
Format	<i>[Exchange Specific value]</i>	An exchange specific value , internally specifying the foreign market of a security.
Possible Values	ARCX	NYSE Arca
	XASE	NYSE Market LLC
	XNAS	NASDAQ - All Markets
	XNYS	New York Stock Exchange

2. Quotation Data

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

- [2.1. Quotation Values](#)
- [2.2. TradingStatus](#)
- [2.3. Specific Quotation Tags.](#)

2.1. Quotation Values

The examples below shows the possible values of an instrument on BATS US market data stream:

```
-- 444/750000
  BID: 57.09      0      *NO ORDER*
  ASK: 58.22      0      *NO ORDER*
  LastPrice                float64{57.68}
  LastTradeQty             float64{19}
  DailyTotalVolumeTraded   float64{0}
  DailyTotalAssetTraded    float64{0}
  LastTradePrice           float64{57.68}
  LastTradeTimestamp       Timestamp{2015-04-15 19:59:58:986}
  InternalDailyOpenTimestamp Timestamp{2015-04-16 12:00:00:432}
  InternalDailyCloseTimestamp Timestamp{2015-04-15 21:01:00:400}
  InternalDailyHighTimestamp Timestamp{2015-04-15 17:12:15:328}
  InternalDailyLowTimestamp Timestamp{2015-04-15 14:19:38:200}
  InternalPriceActivityTimestamp Timestamp{2015-04-16 11:14:04:111}
  TradingStatus            17=ReadyToTrade
  LastOffBookTradePrice    float64{57.685}
  LastOffBookTradeQty      float64{100}
  LastOffBookTradeTimestamp Timestamp{2015-04-15 19:59:59:585}
  PreviousDailyTotalVolumeTraded float64{53767}
  PreviousDailyTotalAssetTraded float64{3092752.86}
  PreviousDailyClosingPrice float64{57.68}
  PreviousBusinessDay      Timestamp{2015-04-15}
  CurrentBusinessDay       Timestamp{2015-04-16}
  DailyTotalOffBookVolumeTraded float64{0}
  DailyTotalOffBookAssetTraded float64{0}
  InternalDailyClosingPriceType char{d}
  PriceActivityMarketTimestamp Timestamp{2015-04-16 07:58:47:676}
```

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

2.2. TradingStatus

Each time a modification of the trading status occurs, the values of the quotation tag **TradingStatus** conveyed on the BATS US market data stream are disseminated via FeedOS 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 FeedOS

Component	Value	Description
Tag Name	<code>TradingStatus</code>	FeedOS tag name.
Numeric ID	9100	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	Enum	Enum data type.
Format	<i>[Exchange Specific Value]</i>	An exchange specific value , detailing the characteristics of the trading status.
Possible Values	17	Ready to Trade
	18	Not Available for Trading

2.3. Specific Quotation Tags

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

- [2.3.1. Other Values.](#)

2.3.1. Other Values

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

- [2.3.1.1. RegSHOAction](#)
- [2.3.1.2. InternalDailyClosingPriceType](#)
- [2.3.1.3. RetailPriceImprovement](#)
- [2.3.1.4. MARKET_BATS_AuctionType.](#)

2.3.1.1. RegSHOAction

Each time a short sale price restriction occurs, the values of the quotation tag **RegSHOAction** conveyed on the BATS US market data stream are disseminated via FeedOS 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 `RegSHOAction` is described in the table below:

Table 5 `RegSHOAction` – technical implementation in FeedOS

Component	Value	Description
Tag Name	<code>RegSHOAction</code>	FeedOS tag name.
Numeric ID	9113	FeedOS unique ID broadcast on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	Enum	Enum data type.

Table 5 RegSHOAction – technical implementation in FeedOS (Continued)

Component	Value	Description
Format	<i>[Exchange Specific Value]</i>	An exchange specific value , detailing the short sale price restriction status.
Possible Values	1	No short sale price restriction.
	2	Short sale price restriction in progress.
	3	Short sale price restriction remains in effect for a second business day.

2.3.1.2. InternalDailyClosingPriceType

The values of the quotation tag **InternalDailyClosingPriceType** conveyed on the BATS US 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 currently disseminated are highlighted in **green**):

Table 6 InternalDailyClosingPriceType – technical implementation in FeedOS

Component	Value	Description
Tag Name	<code>InternalDailyClosingPriceType</code>	FeedOS tag name.
Numeric ID	9155	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	Char	Char data type.
Format	<i>[Internal Specific Value]</i>	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).

2.3.1.3. RetailPriceImprovement

The values of the quotation tag **RetailPriceImprovement** conveyed on the BATY market are disseminated via FeedOS data stream in *Other Values* to indicate when an RPI (Retail Price Improvement) is present for a symbol on the BYX Exchange order book or an RPI order is no longer available:

- 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 **RetailPriceImprovement** is described in the following table:

Table 7 RetailPriceImprovement – technical implementation in FeedOS

Component	Value	Description
Tag Name	RetailPriceImprovement	FeedOS tag name.
Numeric ID	9364	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	Char	Char data type.
Format	<i>[Exchange Specific Value]</i>	An exchange specific value , indicating when an RPI (Retail Price Improvement) is present for a symbol on the BYX Exchange order book or an RPI order is no longer available..
Possible Values	B	Buy Side RPI
	S	Sell Side RPI
	A	Buy & Sell Side RPI
	N	No RPI

2.3.1.4. MARKET_BATS_AuctionType

Each time a trade occurs, the values of the quotation tag **MARKET_BATS_AuctionType** conveyed on the BATS US market data stream are disseminated via FeedOS data stream in *Other Values* to indicate the type of auction:

- 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 **MARKET_BATS_AuctionType** is described in the table below:

Table 8 MARKET_BATS_AuctionType – technical implementation in FeedOS

Component	Value	Description
Tag Name	MARKET_BATS_AuctionType	FeedOS tag name.
Numeric ID	14850	FeedOS unique ID broadcast on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	Enum	Enum data type.
Format	<i>[Exchange Specific Value]</i>	An exchange specific value , indicating the type of auction.
Possible Values	O	Opening Auction
	C	Closing Auction
	H	Halt Auction
	I	IPO Auction

3. Official Closing Price

The closing price is the last trade price upon close. If the instrument has an auction phase, the market sends the last auction price which becomes the closing price. There is no correction or settlement price.

4. Special Behavior

The following sections detail the special behavior of the BATS US market data stream:

- [4.1. Update of the Level1 Market Data Kinematics – Halted Instruments Behavior](#)
- [4.2. Update of the Level1 Market Data Kinematics – Opening Auctions](#)
- [4.3. Microsecond Timestamp Precision on the Level1 Market Data.](#)

4.1. Update of the Level1 Market Data Kinematics – Halted Instruments Behavior

In the Level1 Market Data Kinematics **before 2015-05-04**, the exchange sent the OPEN signal for all instruments, including those on halt, 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 11:20:52:052 931897945 RegSHOAction=1 TradingStatus=2
SI 12:00:00:227 931897945 OPEN *
TE 12:00:00:227 931897945 * * * * * * 0
VU 12:00:00:227 931897945 TradingStatus=17
VU 14:50:16:914 931897945 RegSHOAction=1 TradingStatus=5
VU 14:50:16:914 931897945 TradingStatus=17
TE 14:50:16:915 931897945 * * 11.6 100@1 * *
TE 14:50:16:916 931897945 * * * * 21.04 100@1
```

In the Level1 Market Data Kinematics **after 2015-05-04**, the exchange sends the OPEN signal only for non-halted instruments, 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 11:20:52:039.625 931897945 RegSHOAction=1 TradingStatus=2
VU 14:50:16:914.328 931897945 TradingStatus=5
SI 14:50:16:914.328 931897945 OPEN *
TE 14:50:16:914.328 931897945 * * * * * * 0
VU 14:50:16:914.328 931897945 RegSHOAction=1 TradingStatus=17
TE 14:50:16:915.451 931897945 * * 11.6 100@1 * *
TE 14:50:16:915.564 931897945 * * * * 21.04 100@1
```

4.2. Update of the Level1 Market Data Kinematics – Opening Auctions

In the Level1 Market Data Kinematics **before 2015-05-04**, the Trading Status of all auction eligible instruments was set to 5=PriceIndication at 08:00 New York Time (EDST):

```

"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 11:16:00:747 931897945 * * ! 0 ! 0
VU 11:20:52:052 931897945 RegSHOAction=1
VU 12:00:00:001 931897945 TradingStatus=17
SI 12:00:00:227 931897945 OPEN *
TE 12:00:00:227 931897945 * * * * * 0
VU 12:00:00:227 931897945 TradingStatus=5
TE 12:47:45:471 931897945 * * 20.55 100@1 * *
TE 12:47:45:472 931897945 * * * * 61.65 100@1
--
TE 13:29:56:966 931897945 * * * * 41.44 300@1
TE 13:29:56:966 931897945 * * * * 41.39 300@1
VU 13:30:00:018 931897945 LastAuctionPrice=41.25
VU 13:30:00:018 931897945 LastAuctionPrice=41.1 LastAuctionVolume=0
DailyOpeningPrice=41.1 TradingStatus=17
TE 13:30:00:021 931897945 * * 41.06 200@1 * *
TE 13:30:00:021 931897945 * * 41.04 200@1 * *
--
TE 19:54:58:403 931897945 * * * * 41.27 1700@3
TE 19:54:59:197 931897945 * * 41.22 1500@1 * *
TE 19:54:59:412 931897945 * * * * 41.27 700@2
VU 19:55:00:001 931897945 LastAuctionPrice=41.245 MARKET_BATS_AuctionType=C
TradingStatus=5
TE 19:55:01:018 931897945 * * 41.22 2100@2 * *
TE 19:55:07:162 931897945 * * * * 41.27 100@1
TE 19:55:07:164 931897945 * * * * 41.27 700@2

```

In the Level1 Market Data Kinematics **after 2015-05-04**, the Trading Status of all auction eligible instruments will be set to 5=PriceIndication, two minutes before 09:30 New York Time (EDST) or upon receiving the Auction information, as shown below (the Trading Status will change back to 17=ReadyToTrade only when a trade occurs or upon receiving the Auction summary message – reset of the auction information):

```

"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 11:16:00:747.828 931897945 * * ! 0 ! 0
VU 11:20:52:039.635 931897945 RegSHOAction=1
SI 12:00:00:001.123 931897945 OPEN *
TE 12:00:00:001.123 931897945 * * * * * 0
VU 12:00:00:001.123 931897945 RegSHOAction=1 TradingStatus=17
TE 12:47:45:471.421 931897945 * * 20.55 100@1 * *
TE 12:47:45:471.421 931897945 * * * * 61.65 100@1
--
TE 13:27:31:663.335 931897945 * * 40.02 400@1 * *
TE 13:27:45:998.721 931897945 * * 40.01 400@1 * *
TE 13:27:45:998.721 931897945 * * * * 42.17 400@1
VU 13:28:00:007.195 931897945 LastAuctionPrice=41.09 MARKET_BATS_AuctionType=0
TradingStatus=5
TE 13:28:00:036.387 931897945 * * 40.01 500@2 * *
TE 13:28:00:036.387 931897945 * * * * 42.17 500@2
TE 13:28:00:329.564 931897945 * * 40.02 400@1 * *
TE 13:28:00:332.648 931897945 * * 40.02 500@2 * *
VU 13:28:05:049.874 931897945 LastAuctionPrice=41.095
--
TE 13:29:56:965.329 931897945 * * * * 41.44 300@1
TE 13:29:56:965.330 931897945 * * * * 41.39 300@1
VU 13:30:00:365.235 931897945 LastAuctionPrice=41.25
VU 13:30:00:365.311 931897945 LastAuctionPrice=41.1 LastAuctionVolume=0
TradingStatus=17
TE 13:30:00:365.707 931897945 * * 41.06 200@1 * *
TE 13:30:00:365.707 931897945 * * 41.04 200@1 * *
TE 13:30:00:365.707 931897945 * * * * 41.41 300@1
--
TE 19:54:58:436.083 931897945 * * * * 41.27 1700@3
TE 19:54:59:197.085 931897945 * * 41.22 1500@1 * *
TE 19:54:59:412.086 931897945 * * * * 41.27 700@2
VU 19:55:00:137.577 931897945 LastAuctionPrice=41.245 MARKET_BATS_AuctionType=C
TradingStatus=5
TE 19:55:01:815.128 931897945 * * 41.22 2100@2 * *
TE 19:55:07:508.328 931897945 * * * * 41.27 100@1
TE 19:55:07:508.521 931897945 * * * * 41.27 700@2
--
TE 20:00:48:238.168 931897945 * * * * 47.22 100@1
TE 20:00:48:240.254 931897945 * * * * 48.31 100@1
TE 20:02:02:333.687 931897945 * * * * ! 0
TE 21:00:00:001.495 931897945 * * ! 0 * *
VU 21:00:00:565.348 931897945 TradingStatus=18
TE 23:30:00:920.684 931897945 * * ! 0 ! 0

```

4.3. Microsecond Timestamp Precision on the Level1 Market Data

Effective **2015-05-04**, 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 19:55:07:508.521 931897945 * * * * 41.27 700@2
TE 20:00:48:238.168 931897945 * * * * 47.22 100@1
TE 20:00:48:240.254 931897945 * * * * 48.31 100@1

```

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: <https://support.quanthouse.com>.