S&P Capital IQ Real-Time Solutions

FeedOS™ Developer's Notice

NSE INDIA – Feed Update

Reference n°: 20150428 – 18787 – 25847 – 24621

Effective as of: June 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: NSE INDIA – Feed Update
Reference 20150428 – 18787 – 25847 – 24621
June 22, 2015

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UPDATE OF THE NSE INDIA MARKET DATA STREAM

To reflect the changes caused by the migration of the NSE INDIA market data stream to the DMA protocol, 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	20150428 – 18787 – 25847 – 24621
Exchanges	NSE INDIA
Concerned MICs	XNSE
Internal Source ID	54, 136, 137, 147, 206, 215, 218
Effective Date	**June 2015***
Impact	• Update of the Referential Tags • Update of the Quotation Tags • Update of the Level1 Market Data Kinematics
Action required	**MANDATORY ACTION** - see sections: • 2.1.10. SecurityType • 2.1.11. CFICode • 2.2.5. TradingStatus • 2.3. Special Behavior.

2. FeedOS Technical Implementation

Effective **June*** **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 NSE INDIA market data stream, as described below:

- 2.1. Changes to the Referential Data
- 2.2. Changes to the Quotation Data
- 2.3. Special Behavior.

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 NSE INDIA market data stream:

Table 2 Referential tags added on the NSE INDIA market data stream

Tag Name	Numeric ID	Type
CouponPaymentDate	224	Uint32
IssueDate	225	Timestamp
RoundLot	561	Float64
SecurityStatus	965	UInt8
ISIN	9503	String
PriceIncrement_static	9506	Float64
OperatingMIC	9533	String
OutstandingShares	9558	Int32
FaceValue	9565	Float64

Moreover, S&P Capital IQ Real-Time Solutions **updates** the referential tags below:

Table 3 Referential tags disseminating updated values on the NSE INDIA market data stream

Tag Name	Numeric ID	Type
SecurityType	167	String
CFICode	461	String
LocalCodeStr	9500	String

S&P Capital IQ Real-Time Solutions also **removes** the referential tags below:

Table 4 Referential tags no longer disseminated on the NSE INDIA market data stream

Tag Name	Numeric ID	Type
ContractMultiplier	231	Float64
InternalAggregationId	9404	UInt16
SEDOL	9505	String

* 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.

2.1.1. CouponPaymentDate

The values of the referential tag **CouponPaymentDate** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the date when the interest for a bond, note or fixed income security is to be paid.

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

Table 5 CouponPaymentDate – technical implementation in FeedOS

Component	Value	Description
Tag Name	`CouponPaymentDate`	FeedOS tag name.
Numeric ID	`224`	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	`UInt32`	UInt32 data type.
Format / Possible Value	*`[Exchange Specific Value]`*	An ***exchange specific value***, specifying the date when the interest for a bond, note or fixed income security is to be paid.

2.1.2. IssueDate

The values of the referential tag **IssueDate** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to detail the issue date of a security.

FeedOS implementation of the tag `IssueDate` is described below:

Table 6 IssueDate – technical implementation in FeedOS

Component	Value	Description
Tag Name	`IssueDate`	FeedOS tag name.
Numeric ID	`225`	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	`Timestamp`	Timestamp data type.
Format / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the issue date of a security.

2.1.3. RoundLot

The values of the referential tag **RoundLot** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the smallest order that can be placed.

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

Table 7 RoundLot – technical implementation in FeedOS

Component	Value	Description
Tag Name	`RoundLot`	FeedOS tag name.
Numeric ID	`561`	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 value***, detailing the smallest order that can be placed.

2.1.4. SecurityStatus

The values of the referential tag **SecurityStatus** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to indicate the status of an instrument.

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

Table 8 SecurityStatus – technical implementation in FeedOS

Component	Value	Description
Tag Name	`SecurityStatus`	FeedOS tag name.
Numeric ID	`965`	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***, indicating the status of an instrument.
Possible Values	`1`	Active (Default value)
	`2`	Inactive
	`3`	Suspended

2.1.5. ISIN

The values of the referential tag **ISIN** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the International Securities Identification Number.

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

Table 9 ISIN – technical implementation in FeedOS

Component	Value	Description
Tag Name	`ISIN`	FeedOS tag name.
Numeric ID	`9503`	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 / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value***, specifying the currency of the International Securities Identification Number.

2.1.6. PriceIncrement_static

The values of the referential tag **PriceIncrement_static** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to describe the price increments for an instrument.

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

Table 10 PriceIncrement_static – technical implementation in FeedOS

Component	Value	Description
Tag Name	`PriceIncrement_static`	FeedOS tag name.
Numeric ID	`9506`	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 value***, describing the price increments for an instrument.

2.1.7. OperatingMIC

The values of the referential tag **OperatingMIC** conveyed on the NSE INDIA 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:

Table 11 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	`XNSE`	National Stock Exchange of India

2.1.8. OutstandingShares

The values of the referential tag **OutstandingShares** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the number of total financial assets purchased and held by investors, expressed in units.

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

Table 12 OutstandingShares – technical implementation in FeedOS

Component	Value	Description
Tag Name	`OutstandingShares`	FeedOS tag name.
Numeric ID	`9557`	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	`Int32`	Int32 data type.
Format / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value***, specifying the number of total financial assets purchased and held by investors, expressed in units.

2.1.9. FaceValue

The values of the referential tag **FaceValue** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the amount of money stated on the face of a note, bond or stock.

FeedOS implementation of the tag `FaceValue` is detailed in the table below:

Table 13 FaceValue – technical implementation in FeedOS

Component	Value	Description
Tag Name	`FaceValue`	FeedOS tag name.
Numeric ID	`9565`	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 / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value*** specifying the amount of money stated on the face of a note, bond or stock.

2.1.10. SecurityType

The values of the referential tag **Security Type** conveyed on the NSE INDIA 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`, removed values are in ~~`crossed out red`~~):

Table 14 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.

Table 14 SecurityType – technical implementation in FeedOS (Continued)

Component	Value	Description
Possible Values	~~BOND~~	Bond
	CD	Certificates of Deposit
	~~CORP_BOND~~	Corporate Bond
	CS	Common Stock
	ETF	Exchange-Traded Fund
	GO	General Obligation
	~~GOV_BOND~~	Government Bond
	INDEX	Index
	~~INDX~~	Index
	~~MLEG~~	Multileg
	~~unknown~~	Unknown
	WAR	Warrant

2.1.11. CFICode

The values of the referential tag **CFI Code** conveyed on the NSE INDIA 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`, removed values are in ~~`crossed out red`~~):

Table 15 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	DBXTXX	Debts - Bonds - Government/Treasury Guarantee
	DBXXXX	Debts - Bonds
	DCXXXX	Debts - Convertible Bonds
	~~EBXXXX~~	Equities - Non-Convertible Debt Instrument
	EMXXXX	Equities - Others
	~~EPXXXX~~	Equities - Preferred Shares
	ERXXXX	Equities - Preference Shares
	ESXXXX	Equities - Shares
	EUXXXX	Equities - Units
	EXXXXX	Equities
	MRIXXX	Others - Referential Instruments - Indices
	~~MRXXXX~~	Others - Referential Instruments
	RWXXXX	Rights - Warrants

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 June 2015                        AFTER June 2015
{ XNSE BOND       DBXXXX }              { XNSE CD         EMXXXX }
{ XNSE CORP_BOND  DBXXXX }              { XNSE CS         ERXXXX }
{ XNSE CS         EBXXXX }              { XNSE CS         ESXXXX }
{ XNSE CS         EPXXXX }              { XNSE CS         EXXXXX }
{ XNSE CS         ESXXXX }              { XNSE ETF        EUXXXX }
{ XNSE CS         EUXXXX }              { XNSE GO         DBXTXX }
{ XNSE CS         EXXXXX }              { XNSE GO         DBXXXX }
{ XNSE GOV_BOND   DBXXXX }              { XNSE GO         DCXXXX }
{ XNSE INDX       MRIXXX }              { XNSE INDEX      MRIXXX }
{ XNSE MLEG       MRXXXX }              { XNSE WAR        RWXXXX }
{ XNSE WAR        RWXXXX }
{ XNSE unknown    DBXXXX }
```

2.1.12. LocalCodeStr

The values of the referential tag **LocalCodeStr** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Referential* to specify the instrument listing identifier on a given market.

FeedOS implementation of the tag `LocalCodeStr` is detailed in the table below:

Table 16 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 / Possible Values	*`[Exchange Specific Value]`*	An ***exchange specific value*** detailing the instrument listing identifier on a given market.

Referential Data Sample

Below are several examples showing the current implementation of the newly added (in `green`), updated (in `blue`) and removed (in ~~`crossed out red`~~) referential tags:

- Equities
- Bonds
- Indices
- Warrants.

Equities

```
BEFORE June 2015
instr # 119/1014483 = 250575571
    PriceCurrency               string{INR}
    Symbol                      string{TATAMOTORS.EQ}
    Description                 string{TATA MOTORS LIMITED}
    SecurityType                string{CS}
    FOSMarketId                 XNSE
    ContractMultiplier          float64{1}
    CFICode                     string{ESXXXX}
    InternalCreationDate        Timestamp{2015-03-07 20:22:03:210}
    InternalModificationDate    Timestamp{2015-06-01 12:38:18:449}
    InternalSourceId            uint16{218}
    InternalAggregationId       uint16{147}
    LocalCodeStr                string{941.E:TATAMOTORS.EQ}
    ISIN                        string{INE155A01022}
    SEDOL                       string{B611LV1}


AFTER June 2015
instr # 119/1017544 = 250578632
    PriceCurrency               string{INR}
    Symbol                      string{TATAMOTORS}
    Description                 string{TATA MOTORS LIMITED}
    SecurityType                string{CS}
    FOSMarketId                 XNSE
    IssueDate                   Timestamp{1984-10-23 18:30:00}
    CFICode                     string{ESXXXX}
    RoundLot                    float64{1}
    SecurityStatus              uint8{1}
    InternalCreationDate        Timestamp{2015-05-27 16:18:29:161}
    InternalModificationDate    Timestamp{2015-05-27 16:18:29:161}
    InternalSourceId            uint16{147}
    InternalEntitlementId       NSE
    LocalCodeStr                string{TATAMOTORS_EQ}
    ISIN                        string{INE155A01022}
    PriceIncrement_static       float64{0.05}
    OperatingMIC                string{XNSE}
    OutstandingShares           int32{-2147483648}
    FaceValue                   float64{2}
```

Bonds

```
BEFORE June 2015
instr # 119/1308888 = 250869976
    Symbol                      string{HUDCO.N2}
    SecurityType                string{BOND}
    FOSMarketId                 XNSE
    ContractMultiplier          float64{1}
    CFICode                     string{DBXXXX}
    InternalCreationDate        Timestamp{2015-03-07 20:21:43:156}
    InternalModificationDate    Timestamp{2015-05-15 06:00:01:036}
    InternalSourceId            uint16{147}
    InternalAggregationId       uint16{147}
    LocalCodeStr                string{941.B:HUDCO.N2}


AFTER June 2015
instr # 119/1007222 = 250568310
    PriceCurrency               string{INR}
    Symbol                      string{HUDCO}
    Description                 string{8.20 NCD05MAR27 FV 1000}
    SecurityType                string{GO}
    FOSMarketId                 XNSE
    IssueDate                   Timestamp{2002-03-20 18:30:00}
    CFICode                     string{DBXXXX}
    RoundLot                    float64{1}
    SecurityStatus              uint8{1}
    InternalCreationDate        Timestamp{2015-05-04 13:42:12:401}
    InternalModificationDate    Timestamp{2015-05-04 13:42:12:401}
    InternalSourceId            uint16{147}
    InternalEntitlementId       NSE
    LocalCodeStr                string{HUDCO_N2}
    ISIN                        string{INE031A07840}
    PriceIncrement_static       float64{0.01}
    OperatingMIC                string{XNSE}
    OutstandingShares           int32{25182247}
    FaceValue                   float64{1000}
```

Indices

```
BEFORE June 2015
instr # 119/1016239 = 250577327
    PriceCurrency               string{INR}
    Symbol                      string{NIFTY}
    Description                 string{CNX NIFTY}
    SecurityType                string{INDX}
    FOSMarketId                 XNSE
    CFICode                     string{MRIXXX}
    SecuritySubType             string{INDEX}
    InternalCreationDate        Timestamp{2015-03-07 20:22:05:267}
    InternalModificationDate    Timestamp{2015-06-02 02:20:00:947}
    InternalSourceId            uint16{218}
    InternalAggregationId       uint16{218}
    LocalCodeStr                string{941.I:NIFTY}


AFTER June 2015

instr # 119/1020139 = 250581227
    PriceCurrency               string{INR}
    Symbol                      string{CNX_NIFTY}
    Description                 string{CNX NIFTY}
    SecurityType                string{INDEX}
    FOSMarketId                 XNSE
    CFICode                     string{TIXXXX}
    InternalCreationDate        Timestamp{2015-05-27 16:17:45:470}
    InternalModificationDate    Timestamp{2015-05-27 16:17:45:470}
    InternalSourceId            uint16{218}
    InternalEntitlementId       NSE
    LocalCodeStr                string{CNX_NIFTY}
    OperatingMIC                string{XNSE}
```

Warrants

```
BEFORE June 2015
instr # 119/1309080 = 250870168
    PriceCurrency               string{INR}
    Symbol                      string{IBULHSGFIN.W1}
    Description                 string{Indiabulls Hsg Fin Ltd}
    SecurityType                string{WAR}
    FOSMarketId                 XNSE
    ContractMultiplier          float64{20000}
    CFICode                     string{RWXXXX}
    InternalCreationDate        Timestamp{2015-03-07 20:22:05:266}
    InternalModificationDate    Timestamp{2015-03-17 12:56:08:933}
    InternalSourceId            uint16{147}
    InternalAggregationId       uint16{147}
    LocalCodeStr                string{941.W:IBULHSGFIN.W1}
    ISIN                        string{INE148I13017}


AFTER June 2015
instr # 119/1012901 = 250573989
    PriceCurrency               string{INR}
    Symbol                      string{IBULHSGFIN}
    Description                 string{INDIABULLS HSG FIN LTD}
    SecurityType                string{WAR}
    FOSMarketId                 XNSE
    IssueDate                   Timestamp{2003-07-23 18:30:00}
    CFICode                     string{RWXXXX}
    RoundLot                    float64{20000}
    SecurityStatus              uint8{3}
    InternalCreationDate        Timestamp{2015-04-10 15:01:36:324}
    InternalModificationDate    Timestamp{2015-04-10 15:01:36:324}
    InternalSourceId            uint16{147}
    InternalEntitlementId       int32{1189}
    LocalCodeStr                string{IBULHSGFIN_K1}
    ISIN                        string{INE148I13017}
    PriceIncrement_static       float64{0.05}
    OperatingMIC                string{XNSE}
    OutstandingShares           int32{27500000}
    FaceValue                   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 NSE INDIA market data stream:

Table 17 Quotation tags added on the NSE INDIA market data stream

Tag Name	Numeric ID	Type
LastAuctionPrice	9146	Float64
LastAuctionVolume	9147	Float64
InternalDailyClosingPriceType	9155	Char
InternalDailyVWAP	9393	Float64

Moreover, S&P Capital IQ Real-Time Solutions **updates** the quotation tags below:

Table 18 Quotation tags disseminating updated values on the NSE INDIA market data stream

Tag Name	Numeric ID	Type
TradingStatus	9100	Enum

2.2.1. LastAuctionPrice

The values of the quotation tag **LastAuctionPrice** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Other Values* to detail the last 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 `LastAuctionPrice` is described in the following table:

Table 19 LastAuctionPrice – technical implementation in FeedOS

Component	Value	Description
Tag Name	`LastAuctionPrice`	FeedOS tag name.
Numeric ID	9146	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 value***, detailing the last auction price.

2.2.2. LastAuctionVolume

The values of the quotation tag **LastAuctionVolume** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Other Values* to detail the last volume:

- 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 `LastAuctionVolume` is described in the following table:

Table 20 LastAuctionVolume – technical implementation in FeedOS

Component	Value	Description
Tag Name	`LastAuctionVolume`	FeedOS tag name.
Numeric ID	9147	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 value***, detailing the last auction volume.

2.2.3. InternalDailyClosingPriceType

The values of the quotation tag **InternalDailyClosingPriceType** conveyed on the NSE INDIA 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 June 2015 are highlighted in `green`):

Table 21 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).

2.2.4. InternalDailyVWAP

The values of the quotation tag **InternalDailyVWAP** conveyed on the NSE INDIA market data stream are disseminated via FeedOS data stream in *Other Values* to detail the Volume Weighted Average Price internally calculated:

- 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 `InternalDailyVWAP` is described in the following table:

Table 22 InternalDailyVWAP – technical implementation in FeedOS

Component	Value	Description
Tag Name	`InternalDailyVWAP`	FeedOS tag name.
Numeric ID	`9393`	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 value***, detailing the Volume Weighted Average Price internally calculated.

2.2.5. TradingStatus

Each time a modification of the trading status occurs, the values of the quotation tag **TradingStatus** conveyed on the NSE INDIA 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 (newly added values are highlighted in `green`):

Table 23 TradingStatus – technical implementation in FeedOS

Component	Value	Description
Tag Name	`TradingStatus`	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	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the characteristics of the trading status.
Possible Values	2	Trading Halt
	5	Price Indication
	16	Trade Dissemination Time
	17	Ready to Trade
	18	Not Available for Trading
	21	Pre-Open

Quotation Data Sample

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

```
BEFORE June 2015
InstrumentStatusL1
-- 119/1009251
        BID: 8.05   0   *NO ORDER*
        ASK: 8.65   0   *NO ORDER*
        LastPrice                 float64{8.45}
        LastTradeQty              float64{90}
        DailyHighPrice            float64{8.65}
        DailyLowPrice             float64{8.45}
        DailyTotalVolumeTraded    float64{290}
        DailyTotalAssetTraded     float64{2488.5}
        LastTradePrice            float64{8.45}
        LastTradeTimestamp        Timestamp{2015-03-17 06:44:32}
        InternalDailyOpenTimestamp     Timestamp{2015-03-17 04:49:22:713}
        InternalDailyCloseTimestamp    Timestamp{2015-03-17 11:12:04:631}
        InternalDailyHighTimestamp     Timestamp{2015-03-17 04:49:22:713}
        InternalDailyLowTimestamp      Timestamp{2015-03-17 05:49:27:197}
        InternalPriceActivityTimestamp Timestamp{2015-03-18 09:54:56:659}
        TradingStatus                  17=ReadyToTrade
        DailyOpeningPrice              float64{8.65}
        DailyClosingPrice              float64{8.45}
        PreviousDailyTotalVolumeTraded float64{290}
        PreviousDailyTotalAssetTraded  float64{1770}
        PreviousDailyClosingPrice      float64{8.45}
        PreviousBusinessDay            Timestamp{2015-03-16}
        CurrentBusinessDay             Timestamp{2015-03-17}
        PriceActivityMarketTimestamp   Timestamp{2015-03-18 09:49:56}
```

```
AFTER June 2015
InstrumentStatusL1
-- 119/1008974
        BID: 34.25      393
        ASK: 34.45      116
        LastPrice                       float64{34.25}
        DailyHighPrice                  float64{35.8}
        DailyLowPrice                   float64{34}
        DailyTotalVolumeTraded          float64{36901}
        DailyTotalAssetTraded           float64{1291535}
        InternalDailyOpenTimestamp      Timestamp{2015-04-27 03:45:00:442}
        InternalDailyCloseTimestamp     Timestamp{2015-04-24 10:00:00:184}
        InternalDailyHighTimestamp      Timestamp{2015-04-27 03:46:53:739}
        InternalDailyLowTimestamp       Timestamp{2015-04-27 03:45:15:055}
        InternalPriceActivityTimestamp  Timestamp{2015-04-27 09:35:05:472}
        PriceActivityMarketTimestamp    Timestamp{2015-04-27 09:35:05}
        LowLimitPrice                   float64{27.75}
        HighLimitPrice                  float64{41.55}
        TradingStatus                   17=ReadyToTrade
        DailyOpeningPrice               float64{35}
        PreviousDailyTotalVolumeTraded  float64{31082}
        PreviousDailyTotalAssetTraded   float64{1091154.85}
        PreviousDailyClosingPrice       float64{34.65}
        PreviousBusinessDay             Timestamp{2015-04-24}
        CurrentBusinessDay              Timestamp{2015-04-27}
        LastAuctionPrice                float64{35}
        LastAuctionVolume               float64{1254}
        PreviousInternalDailyClosingPriceType  char{a}
        InternalLastAuctionTimestamp           Timestamp{2015-04-27 03:36:20:762}
        InternalDailyBusinessDayTimestamp      Timestamp{2015-04-27 01:30:00:437}
        DailyOpeningPriceTimestamp             Timestamp{2015-04-27 03:45:04}
        DailyHighPriceTimestamp                Timestamp{2015-04-27 03:46:53}
        DailyLowPriceTimestamp                 Timestamp{2015-04-27 03:45:14}
        PreviousDailyClosingPriceTimestamp     Timestamp{2015-04-24 10:01:17}
        InternalDailyVWAP                      float64{35}
```

2.3. Special Behavior

The following sections detail the special behavior of the NSE INDIA market data stream:

- 2.3.1. Introduction of the Multi-Session Kinematics
- 2.3.2. Update of the Level1 Market Data Kinematics – OPEN
- 2.3.3. Addition of the Theoretical Opening Price for Indices
- 2.3.4. Addition of the AT_OPEN Prices
- 2.3.5. Trades Removal
- 2.3.6. Feed Delay Removal
- 2.3.7. Microsecond Timestamp Precision
- 2.3.8. MBL and MBO Data.

2.3.1. Introduction of the Multi-Session Kinematics

The table below summarizes the multi-session kinematics on the NSE INDIA:

Table 24 Trading Session's Kinematics (New Delhi Standard Time)

Session	Trading Hours (New Delhi Time)	Signal	Event
I	09:30	**OPEN**	• TradingSessionId = 1 • RESET `DailyOpeningPrice` • RESET `DailyClosingPrice` • RESET `DailyTotalVolumeTraded` • RESET `SessionTotalAssetTraded` • RESET `SessionClosingPrice` • `PreviousDailyClosingPrice` = `DailyClosingPrice` • `SessionOpeningPrice` • `CurrentBusinessDay` = today's trade date • `PreviousDailyTotalVolumeTraded` = `DailyTotalVolumeTraded`
	10:30	close	
II	10:30	open	• Trading Session ID +1 • RESET `SessionClosingPrice` • RESET SessionHigh/Low Price • `PreviousSessionOpeningPrice` = `SessionOpeningPrice` of the previous SessionID • `SessionOpeningPrice`
	11:30	close	
III	11:30	open	• Trading Session ID +1 • RESET `SessionClosingPrice` • RESET SessionHigh/Low Price • `PreviousSessionOpeningPrice` = `SessionOpeningPrice` of the previous SessionID • `SessionOpeningPrice`
	12:30	close	
IV	12:30	open	• Trading Session ID +1 • RESET `SessionClosingPrice` • RESET SessionHigh/Low Price • `PreviousSessionOpeningPrice` = `SessionOpeningPrice` of the previous SessionID • `SessionOpeningPrice`
	13:30	close	
V	13:30	open	• Trading Session ID +1 • RESET `SessionClosingPrice` • RESET SessionHigh/Low Price • `PreviousSessionOpeningPrice` = `SessionOpeningPrice` of the previous SessionID • `SessionOpeningPrice`
	14:30	close	
VI	14:30	open	• `DailyClosingPrice` • `DailyTotalVolumeTraded` • `SessionClosingPrice` • `PreviousDailyClosingPrice` = `DailyClosingPrice` of the previous trading day • RESET `TradingSessionId` (invalid)
	15:30	**CLOSE**	

2.3.2. Update of the Level1 Market Data Kinematics – OPEN

In the Level1 Market Data Kinematics **before June 2015**, the OPEN signal was sent when the first 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   08:48:37:673   250577228    *       *       3.15    150     *       *
COMSTOCK_ENUM_SRC_ID=941
SI   08:49:34:387   250577228    OPEN    3.15
TE   08:49:34:387   250577228    3.15    150     !       0       3.15    4370    OHL
TradeConditionsDictionaryKey=uint32{308281446},COMSTOCK_ENUM_SRC_ID=941,COMSTOCK_f
VU   08:49:34:387   250577228    DailyTotalVolumeTraded=150
TE   09:08:16:496   250577228    3.15    *       3.15    10      *       *
COMSTOCK_ENUM_SRC_ID=941
```

In the Level1 Market Data Kinematics **after June 2015**, the OPEN signal will be trade-independent, 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   00:30:33:130.546   250581080    HighLimitPrice=?        LowLimitPrice=?
VU   02:45:26:991.251   250581080    HighLimitPrice=3.85     LowLimitPrice=3.15
SI   04:00:00:341.434   250581080    OPEN    3.5
TE   04:00:00:341.434   250581080    3.5     *       *       *       *       *       O
VU   04:00:00:341.434   250581080    TradingSessionId=1      SessionOpeningPrice=?
TradingStatus=5
TE   04:00:02:000.408   250581080    *       *       *       *       3.7     401
TE   04:04:19:488.162   250581080    *       *       *       *       3.7     411
```

2.3.3. Addition of the Theoretical Opening Price for Indices

In the Level1 Market Data Kinematics **before June 2015**, the Theoretical Opening Price was not sent, as shown below:

```
VU   03:30:00:000       250581227    TradingStatus=21
SI   03:37:52:000       250581227    OPEN    8327.1
TE   03:37:52:000       250581227    8327.1  *       *       *       *       *       OHL
COMSTOCK_ENUM_SRC_ID=941
```

In the Level1 Market Data Kinematics **after June 2015**, indices will send the Theoretical Opening Price via the tag `LastAuctionPrice` between 03:30 UTC and OPEN time, 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   03:30:00:182.887   250581227    TradingStatus=21
VU   03:30:22:170.748   250581227    LastAuctionPrice=8436.35
VU   03:30:23:183.534   250581227    LastAuctionPrice=8439.35
VU   03:37:50:347.106   250581227    LastAuctionPrice=8326.9
VU   03:37:51:339.198   250581227    LastAuctionPrice=8326.4
SI   03:37:52:355.673   250581227    OPEN    8327.1
TE   03:37:52:355.673   250581227    8327.1  *       *       *       *       *       OHLy
VU   03:37:52:355.673   250581227    LastAuctionPrice=8327.1
VU   03:45:00:299.696   250581227    TradingStatus=17
```

2.3.4. Addition of the AT_OPEN Prices

In the Level1 Market Data Kinematics **before June 2015**, the tags `LastAuctionPrice`, `LastAuctionVolume` and the AT_OPEN price were not disseminated, 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   03:30:00:000   250578632    TradingStatus=21
TE   03:30:02:000   250578632    *       *       484.35  5       482.95  1
COMSTOCK_ENUM_SRC_ID=941
TE   03:30:02:000   250578632    *       *       484.85  229     *       *
COMSTOCK_ENUM_SRC_ID=941
```

In the Level1 Market Data Kinematics **after June 2015**, the tags `LastAuctionPrice`, `LastAuctionVolume` and the AT_OPEN price will be disseminated during the PreOpen Phase:

```
“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   null               250578632    HighLimitPrice=532.75   LowLimitPrice=435.95
VU   null               250578632    TradingStatus=21
TE   03:30:01:000.051   250578632    *       *       AT_OPEN 8854    482.95  1
VU   03:30:01:000.051   250578632    LastAuctionPrice=?      LastAuctionVolume=?
VU   03:30:02:000.643   250578632    LastAuctionPrice=525    LastAuctionVolume=1416
VU   03:30:03:000.745   250578632    LastAuctionPrice=526.6  LastAuctionVolume=1433
```

2.3.5. Trades Removal

In the Level1 Market Data Kinematics **before June 2015**, trades occurred on the NSE INDIA market data stream, 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   09:59:59:000   250575571    483.7   1       483.65  225     483.7   2
TradeConditionsDictionaryKey=uint32{308281446},COMSTOCK_ENUM_SRC_ID=941,COMSTOCK_f79=0
```

In the Level1 Market Data Kinematics **after June 2015**, there will be no more trades, 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   09:59:59:000.125   250578632    LastTradePrice=483.7    LastTradeQty=1
DailyTotalVolumeTraded=7889125  DailyTotalAssetTraded=3818809847.5
```

2.3.6. Feed Delay Removal

Before June 2015, the NSE INDIA market data stream was delayed by 5 seconds. **After June 2015**, the NSE INDIA market data stream will no longer be delayed.

2.3.7. Microsecond Timestamp Precision

Effective **June 2015**, 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   04:00:00:341.434   250581080    3.5     *       *       *       *       *       O
```

2.3.8. MBL and MBO Data*

Effective **June 2015**, the MBL and MBO books are full depth.

* The MBL and MBO 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.

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: https://support.quanthouse.com.