MARKET FEED
Capital Market (CM)
Real Time Snapshot Data

Version: 1.21
Date: 28 August 2024

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Revision History

Name	Description	Date
Version 1.0	New Specification issued	31 March 2015
Version 1.1	Addition of a new Index	12 June 2015
Version 1.2	Index name renamed	29 September 2015
Version 1.3	15-Min Delayed product details added	06 November 2015
Version 1.4	Addition of 10 New Indices and Indices renamed	08 March 2016
Version 1.5	Addition of 4 New Indices	31 January 2018
Version 1.6	Index renamed	22 March 2018
Version 1.7	Index renamed	03 July 2018
Version 1.8	Addition of 5 New Indices	04 January 2019
Version 1.9	Addition of 2 New Indices	06 August 2020
Version 1.10	Addition of 2 New Indices	30 September 2020
Version 1.11	Addition of 5 New Indices	03 August 2021
Version 1.12	Field Name changed from Warning Percent to Settlement Cycle in Security Information	21 December 2021
Version 1.13	Addition of 7 new indices	08 January 2022
Version 1.14	Added the note regarding Inclusion of Dummy symbols in MBP file	25 November 2022
Version 1.15	Increased token number range from short to long	23 August 2023
Version 1.16	Addition of 2 Dummy Indices	20 October2023
Version 1.17	Addition of 2 New Indices	12 January 2024
Version 1.18	1. Addition in Note of T+0 definition in settlement cycle field for Security information 2. Removal in Note of T+2 definition in settlement cycle field for Security information	18 March 2024
Version 1.19	Addition of 4 New Indices	28 March 2024
Version 1.20	Increased total traded quantity range from long to unsigned long	24 April 2024
Version 1.21	1. Increased range of total traded quantity and interval total traded quantity from unsigned long to long long and from long to long long respectively. 2. Addition of Decoding Snapshot files and	28 August 2024

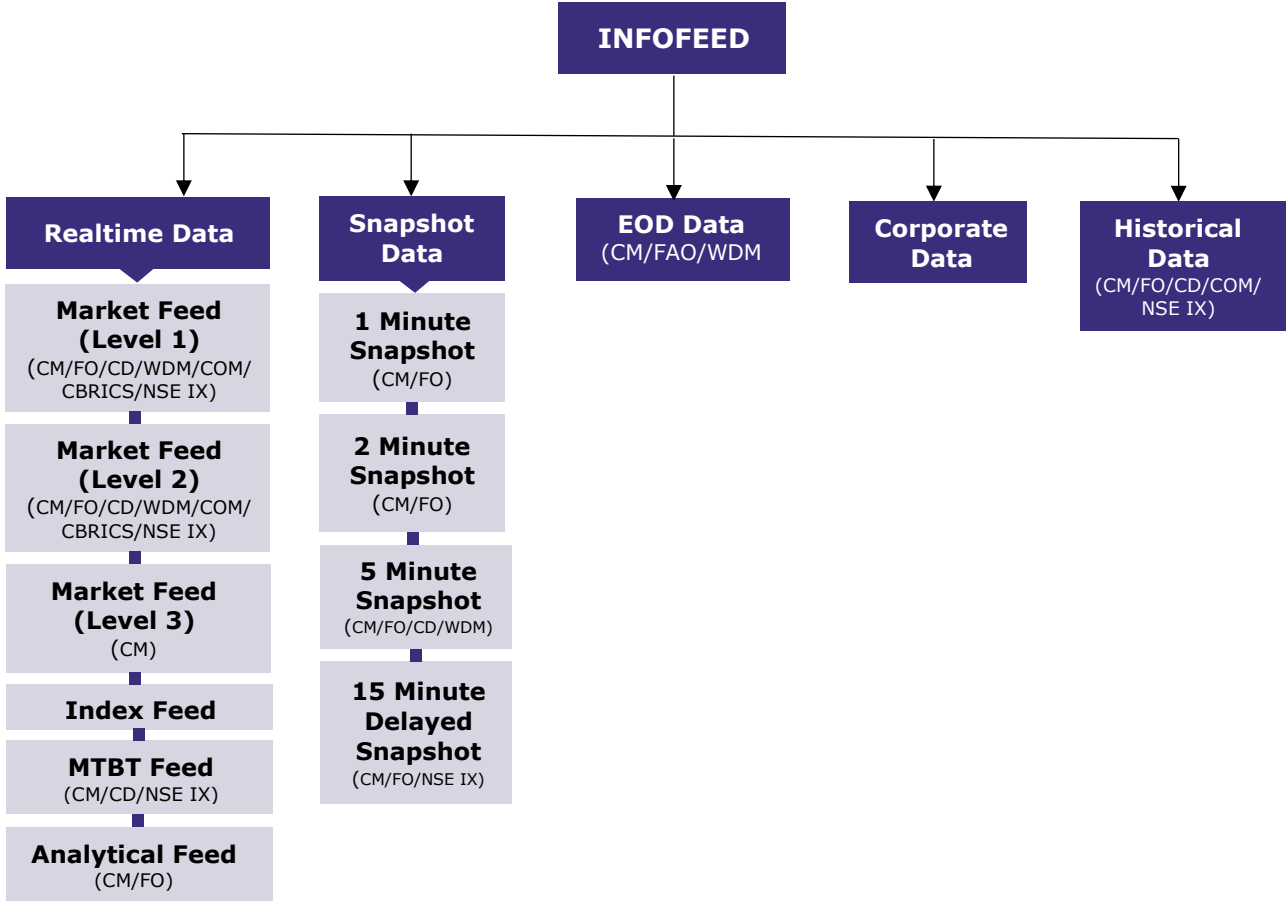|	addition of Indicative Close Value in Indices Information 3. Increased range of best buy quantity, best sell quantity and indicative traded quantity from long to long long. 4. Addition of Indicative Close Price in Market Information 5. Addition of FAQ Section	

Table of Contents

CAPITAL MARKET - SNAPSHOT DATA

1 Introduction

NSE Data & Analytics Ltd. disseminates NSEIL's Real Time Broadcast data to various information agencies. It provides the 3 different types of data to Info Vendors, i.e. Real Time Data, Snapshot Data and End of Day Data. The Real Time Data is a packet broadcast available in Multicast whereas the Snapshot Data and End of day data are available in the form of files. Certain products based on the Real Time Data are also made available through files.

The NIBIS (NSE Internet Based Information System) server that caters the NIBIS Info Vendors is available through Internet. All NIBIS Info Vendors connect the server through internet and use SFTP protocol to download the files. The files on this server are generated on regular intervals. The Info Vendors are provided with credentials which are enabled for the agreement period.

```
                              INFOFEED
   ┌──────────────┬───────────────┬──────────────┬──────────────┐

 Realtime Data   Snapshot       EOD Data      Corporate     Historical
                  Data          (CM/FAO/WDM)    Data          Data
                                                            (CM/FO/CD/COM/
 Market Feed     1 Minute                                     NSE IX)
 (Level 1)       Snapshot
 (CM/FO/CD/WDM/COM/  (CM/FO)
 CBRICS/NSE IX)

 Market Feed     2 Minute
 (Level 2)       Snapshot
 (CM/FO/CD/WDM/COM/  (CM/FO)
 CBRICS/NSE IX)

 Market Feed     5 Minute
 (Level 3)       Snapshot
 (CM)            (CM/FO/CD/WDM)

 Index Feed      15 Minute
                 Delayed
 MTBT Feed       Snapshot
 (CM/CD/NSE IX)  (CM/FO/NSE IX)

 Analytical Feed
 (CM/FO)
```

2 Connection Details

The Info Vendors connect to NIBIS server over the Internet using SFTP protocol. In NSE premises two NIBIS Production Servers operate in an active-active configuration. Each server can be accessed using two IP addresses, for ISP-level redundancy, as shown in the Structural Diagram. In case a server becomes inaccessible through both its IP addresses, the Info Vendor software requires to fail-over to the other server.

2.1 Structural diagram
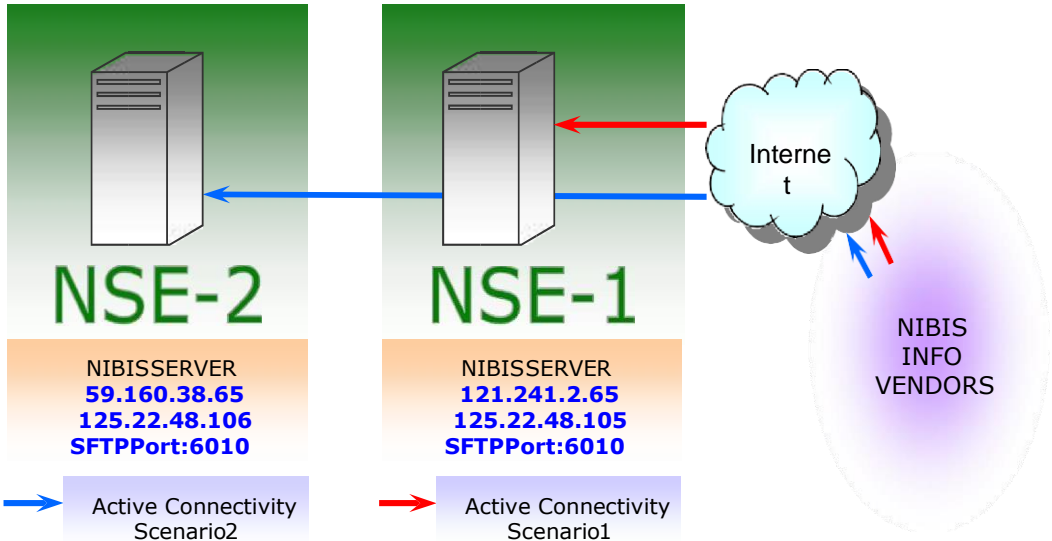
2.2 Platform notes

1. The SFTP service can be simultaneously accessed through both redundant IP addresses on each server. This is to enable Info Vendors to access the servers in case of link failure.
2. Info Vendors may use both IP addresses of a server during normal course of operations to put both available links to use.
3. There may be slight differences between the data disseminated by the two servers because of factors impacting sampling such as CPU clock skew, differences in routing of data, etc.
4. Time stamp on the files on the server is in 24-hour format.
5. Certain files are compressed using ZLIB (gzip). The files may be decompressed using the popular "gunzip" command on Unix/Linux systems. Tools to decompress these files are also freely available for Windows on the World Wide Web, Gzip for Windows and 7-Zip being popular examples.
6. The Exchange does not provide software or support for decompression, SFTP, etc.

3 Overview

3.1 Products and "Product Root"

The files are productized as per the generation frequency and are generated under their designated Product Roots on the server.

Product Root is the name of the top-level directory under which files for a product are generated.

Snapshot Frequency	Generation Frequency	Product Root
1 Minute Snapshot Product	Every 1 Minute	/CM01
2 Minute Snapshot Product	Every 2 Minutes	/CM02
5 Minute Snapshot Product	Every 5 Minutes	/CM05
15 Minute Delayed Snapshot Product	Every 1 Minute, delayed by 15 Minutes	/CM30

The Product Roots may further contain subdirectories as specified in the relevant sections of this document.

Info Vendors may subscribe to product of their choice depending on their data snapshot frequency requirement.

Delayed data products are also available, wherein the files generated on regular 1 minute interval basis is delayed by the specified time.

3.2 Types of files generated.

The files are generated in binary format on the servers inside the corresponding type-wise sub-directories as specified in this document and can be broadly classified as follows:

Description	Frequency
Market Information Files	At a specific interval
Call-Auction Market Information Files	At a specific interval
Security Information Files	Once a day (EOD)
Bhavcopy Information Files	Once a day (EOD)

For each trading day, files are generated in date-wise sub-directories prefixed with the full month name (MonthDDYYYY) as specified in the relevant sections of this document.

The files generated at fixed frequency are continuously numbered, starting from 1.

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3.3 Compression

Certain files are compressed using ZLIB (gzip). The files may be decompressed using the popular "gunzip" command on Unix/Linux systems. Tools to decompress these files are also freely available for Windows on the World Wide Web, Gzip for Windows and 7-Zip being popular examples. It may be noted that the Exchange does not provide software or support for decompression.

3.4 Data Types

Data Type	Size In Bytes
CHAR	1
SHORT	2
LONG	4
DOUBLE	8
LONG LONG	8

Byte order - Little Endian

4 Data Details

4.1. Market Information

The Market information data files (MBP and Index) are generated on the server at regular intervals.

4.1.1. Market Files

The *.mkt ("*" stands for a number) files contain market statistics and order information of the securities that are being traded during the last interval, including their open, high, low and close price. The file contains a single record for every security that is traded during that file interval. These files are generated during normal trading period To Close Session These files are generated in incremental count number on a trading day starting from 1 (for example, 1.mkt, 2.mkt and so on).

During the special trading session (mahurat trading), the first file will be generated after 15 minutes after the trading session starts.
Actual timing circular will be published by the exchange at the appropriate time.

4.1.2. Indices Files

The *.ind ("*" stands for a number) files contain NSEIL Indices information, including open, high, low and close index 4. Each file contains data of all indices of Exchange. These files are generated at regular intervals. These files are generated during normal trading period and during Close Session.

4.2. Call Auction Market Information

Two new market types Call Auction and Reserved (for future use) are introduced in the capital market trading system.

4.2.1. Call Auction Market

Multiple sessions of call auction market can be held in a trading day.

The call auction session shall consist of
- Order collection period (Order entry, modification and cancellation is allowed)
- Order matching period.

The computation of Indicative Opening Price (IOP) and matching logic shall be same as pre-open session for Cash Market segment. In call auction market, after matching period is over all the outstanding orders shall be cancelled.

The Call Auction Market information data files are generated on the server with the extension *.ca1.

The *.ca1 ("*" stands for a number) files contain market statistics and order information of the securities that are being traded in the call auction market in the last 1 minutes along with their open, high, low and close price. The file contains a single record for every security that is traded during that file interval. These files are generated during normal trading period. These files are generated in incremental count number on a trading day starting from 1.ca1.

4.2.2 Call auction in pre-open session (IPO & Re-listed securities)

A new market for IPO & Re-listed securities is introduced by NSE. Reserved market type will be used to generate the data files for this market.

The business functionality for this market type is same as the Call Auction Market (i.e. Order Collection and Order Matching period).

Following is the only difference for this market.
The Buy back and market maker concept is also not there in this market so the 'BBMM Flag' for buy and sell side will be sent as '0' (zero).

This Market information data files are generated on the server with the extension *.ca2

The *.ca2 ("*" stands for a number) files contain market statistics and order information of the securities that are being traded in the SML market in the last 1 minutes along with their open, high, low and close price. The file contains a single record for every security that is traded during that file interval. These files are generated during normal trading period. These files are generated in incremental count number on a trading day starting from 1.ca2.

4.3. Security Information

The Securities.dat file is the master file that contains the updated information of all securities traded on the Exchange. The Info Vendors need to download this file and decode it to resolve the "token number" of required security. The Token number of each security is unique.

4.4. Bhavcopy Information

The bhavcopy information file is generated at around 17:00 hrs on each trading day. The file name is CMBHAVCOPY_DDMMYYYY.TXT. This file contains the End of the Day values of the securities that are traded on that trading day.

Note: Dummy symbols shall be received in MBP file in an affixed pattern where the last 7 character shall remain "**NSETEST**". Kindly ignore dummy securities trade volume and pricing information which is coming in MBP file.

5 Data Structure Details

5.1. Market Information

Directory Path	/<Product Root>/DATA/<MonthDDYYYY>
File Name	*.mkt
Compression	Compressed (.gz)
Generation Frequency	At fixed intervals

Field Name	Data Type	Value	Brief Description
INFO HEADER			
Transcode	SHORT	Numeric	Transaction message number. This describes the type of message received or sent.
Timestamp	LONG	Numeric	This field should be set to numeric zero while sending to the host. This is used in host end.
Message Length	SHORT	Numeric	This field should be set to the length of the entire message, including the length of message header while sending to host.
Info Header Length		**8 Bytes**	
INFO DATA			
Security Token	LONG	Numeric	This field contains the token number
Last Traded Price	LONG	Numeric	This field contains the price at which the latest trade in a security has taken place.
Best Buy Quantity	LONG LONG	Numeric	This field contains the total Buy Quantity
Best Buy Price	LONG	Numeric	The highest price for a Buy auction.
Best Sell Quantity	LONG LONG	Numeric	This field contains the total Sell quantity
Best Sell Price	LONG	Numeric	This is the lowest price for a Sell auction

Total Traded Quantity	LONG LONG	Numeric	This field contains the total quantity of a security traded on the current day
Average Traded Price	LONG	Numeric	This field contains the average price of all the trades in a security.
Open Price	LONG	Numeric	This field contains the open price of a security
High Price	LONG	Numeric	This field contains the highest trade price.
Low Price	LONG	Numeric	This field contains the lowest trade price.
Close Price	LONG	Numeric	This field contains the closing price of a security.
Interval High Price	LONG	Numeric	This field contains the highest trade price during interval
Interval Low Price	LONG	Numeric	This field contains the lowest trade price during interval
Interval Open Price	LONG	Numeric	This field contains the open price of a security during interval
Interval Close Price	LONG	Numeric	This field contains the closing price of a security during interval
Interval Total Traded Quantity	LONG LONG	Numeric	This field contains the total quantity of a security traded during interval
Indicative Close Price	LONG	Numeric	This field contains indicative close price of a security. It will be sent in last 30 minutes of normal session. Until then this will be sent as 0
Info Data Length	**88 Bytes**		

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5.2. Indices Information

Directory Path	/<Product Root>/DATA/<MonthDDYYYY>
File Name	*.ind
Compression	Compressed (.gz)
Generation Frequency	At fixed intervals

Field Name	Data Type	Value	Brief Description
INFO HEADER			
Transcode	SHORT	Numeric	Transaction message number. This describes the type of message received or sent.
Timestamp	LONG	Numeric	This field should be set to numeric zero while sending to the host. This is used in host end.
Message Length	SHORT	Numeric	This field should be set to the length of the entire message, including the length of message header while sending to host.
Info Header Length	**8 Bytes**		
INFO DATA			
Index Token	LONG	Numeric	Token number of the index being updated.
Index Open Value	LONG	Numeric	This field contains the opening index value at the time of market open.
Current Index Value	LONG	Numeric	This field contains the online market index value at that instance of broadcast.
High Index Value	LONG	Numeric	This field contains the day's highest index value at the time of broadcast
Low Index Value	LONG	Numeric	This field contains day's lowest index value at the time of broadcast.

Percentage Change in Index	LONG	Numeric	This field contains the percent change in current index with respect to yesterday's closing index
Interval High Index Value	LONG	Numeric	This field contains today's high index in interval
Interval Low Index Value	LONG	Numeric	This field contains today's low index in interval
Interval Open Index Value	LONG	Numeric	This field contains the opening index value at interval
Interval Close Index Value	LONG	Numeric	This field contains today's closing index at interval
Indicative Close Value	LONG	Numeric	This field contains the indicative index close value.
Info Data Length		**44 Bytes**	

5.3. Security Information

Directory Path	/<Product Root>/SECURITY/<MonthDDYYYY>
File Name	Securities.DAT
Compression	Not compressed
Generation Frequency	Once (EOD)

Field Name	Data Type	Value	Brief Description
INFO HEADER			
Transcode	SHORT	Numeric	Transaction message number. This describes the type of message received or sent.
Timestamp	LONG	Numeric	This field should be set to numeric zero while sending to the host. This is used in host end.
Message Length	SHORT	Numeric	This field should be set to the length of the entire message, including the length of message header while sending to host.
Info Header Length	**8 Bytes**		
INFO DATA			
Token Number	LONG	Numeric	Token number of the security being updated.
Symbol	CHAR [10]	Character	This field contains the Symbol of the security.
Series	CHAR [2]	Character	This field contains the series of a security.
Issued Capital	DOUBLE	Numeric	Issue size of the security
Settlement Cycle	SHORT	Numeric	This field contains the period by which settlement between the parties should take place. This value is defaulted by the Exchange and cannot be modified by the user.
Freeze Percent	SHORT	Numeric	This field contains the volume freeze percent with respect to issued capital.

Credit Rating	CHAR [12]	Character	This field contains the credit rating of the security.
Issue Rate	SHORT	Numeric	Price of the issue.
Issue Start Date	LONG	Numeric	Date of issue of the security.
Issue Pdate	LONG	Numeric	Interest payment date
Issue Maturity Date	LONG	Numeric	Maturity date
Board Lot Quantity	LONG	Numeric	Regular lot size.
Tick Size	LONG	Numeric	Tick size/ Min spread size
Name of Company	CHAR [25]	Character	Name of the company
Record Date	LONG	Numeric	Date of record changed.
Expiry Date	LONG	Numeric	This field contains the last date of trading before any corporate action
No Delivery Start Date	LONG	Numeric	Date from when physical delivery of share certificates is stopped for book closure
No Delivery End Date	LONG	Numeric	No delivery end date.
Book Closure Start Date	LONG	Numeric	Date at which the record books in the company for shareholder names starts.
Book Closure End Date	LONG	Numeric	Date at which the record books in the company for shareholder names ends
Info Data Length	**111 Bytes**		

Note: Settlement Cycle can have two values; either 0 or 1. Value of 0 means Settlement Cycle of the security is T+0 and 1 means Settlement Cycle of the security is T+1.

5.4. Bhavcopy Information

This data file does not contain the Header field.

Directory Path	/<Product Root>/BHAVCOPY/<MonthDDYYYY>
File Name	CMBhavcopy_DDMMYYYY.txt
Compression	Not compressed
Generation Frequency	Once (EOD)

Field Name	Data Type	Value	Brief Description
INFO DATA			
Symbol	CHAR [10]	Character	This field contains the Symbol of the security.
Series	CHAR [2]	Character	This field contains the series of a security.
Trade High Price	CHAR [10]	Character	This field contains the highest trade price.
Trade Low Price	CHAR [10]	Character	This field contains the lowest trade price.
Opening Price	CHAR [10]	Character	This field contains the indicative opening price (IOP) of a security for order collection period session and Final Open Price of a security in matching period.
Closing Price	CHAR [10]	Character	This field contains the closing price of a security
Previous Close Price	CHAR [10]	Character	This field contains the previous day's closing price of the security
Total Traded Quantity	CHAR [12]	Character	This field contains the total quantity of a security traded on the current day
Total Traded Value	CHAR [25]	Character	This field contains the total value of the securities traded
Carriage Return/ Line Feed	CHAR [2]	Character	Carriage Return/ Line Feed
Info Data Length	**101 Bytes**		

5.5. Call Auction Market Information

Directory Path	/<Product Root>/DATA/<MonthDDYYYY>
File Name	*.ca1: Call Auction Market *.ca2: Reserved Market (IPO & Re-listed securities)
Compression	These files are compressed (.gz)
Generation Frequency	At fixed intervals

Field Name	Data Type	Value	Brief Description
INFO HEADER			
Transcode	SHORT	Numeric	Transaction message number. This describes the type of message received or sent.
Timestamp	LONG	Numeric	This field should be set to numeric zero while sending to the host. This is used in host end.
Message Length	SHORT	Numeric	This field should be set to the length of the entire message, including the length of message header while sending to host.
Info Header Length		**8 Bytes**	
INFO DATA			
Security Token	LONG	Numeric	Security Token
Last Traded Price	LONG	Numeric	During order collection as well as during matching, it contains LTP of the security
Best Buy Quantity	LONG LONG	Numeric	Best buy side limit order, price and quantity information.
Best Buy Price	LONG	Numeric	
Buy BBMM Flag	CHAR [1]	Character	For BBMM flag refer 9.3 Market Maker & Buy Back Flag (MMBB Flag)
Best Sell Quantity	LONG LONG	Numeric	Best sell side limit order, price and quantity information.
Best Sell Price	LONG	Numeric	
Sell BBMM Flag	CHAR [1]	Character	For BBMM flag refer 9.3 Market Maker & Buy Back Flag (MMBB Flag)

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Total Traded Quantity	LONG LONG	Numeric	This field contains the total quantity of a security traded on the current day
Indicative Traded Quantity	LONG LONG	Numeric	During order collection period this field will contain Indicative Equilibrium Quantity
Average Traded Price	LONG	Numeric	During order collection period it will always be zero. Once matching starts it will contain the Average Trade Price.
First Open Price	LONG	Numeric	During first call auction order collection period this field will be zero. Once matching starts it will contain the First Trade Price. Once updated for all subsequent call auctions it will not change. This field may remain zero till the first trade happens
Open Price	LONG	Numeric	This field contains the indicative opening price (IOP) of a security for order collection period session and Final Open Price of a security in matching period.
High Price	LONG	Numeric	During order collection period it will always be zero. Once matching starts it will be updated.
Low Price	LONG	Numeric	During order collection period it will always be zero. Once matching starts it will be updated.
Close Price	LONG	Numeric	This field contains the closing price of a security.
Filler	LONG	Numeric	Zero
Info Data Length		**78 Bytes**	

6. File Transcode List

Details	Transcode number
MARKET PRE-OPEN INFORMATION	3
MARKET STATISTICS INFORMATION	5
BROADCAST MESSAGE INFORMATION	6
NEW SECURITY INFORMATION	7
MARKET INDICES INFORMATION	8
CALL AUCTION MARKET INFORMATION	9

7. Index Token Numbers List

The Indices generated during the trading cycle are identified by Index names. The feed shall not bear these names. Instead, a unique Index token shall identify each index. The Info Vendors need to decode the index files by providing following combinations of the Index Token number and Index Name.

Index Token	Index Name
0	NIFTY 50
1	NIFTY IT
2	NIFTY NEXT 50
3	NIFTY50 USD (NOT IN USE)
4	NIFTY BANK
5	NIFTY MIDCAP 100
6	NIFTY 500
7	NIFTY 100
8	NIFTY MIDCAP 50
9	NIFTY REALTY
10	NIFTY INFRA
11	INDIA VIX
12	NIFTY ENERGY
13	NIFTY FMCG
14	NIFTY MNC
15	NIFTY PHARMA
16	NIFTY PSE
17	NIFTY PSU BANK
18	NIFTY SERV SECTOR
19	NIFTY SMLCAP 100
20	NIFTY 200
21	NIFTY AUTO
22	NIFTY MEDIA
23	NIFTY METAL
24	NIFTY DIV OPPS 50
25	NIFTY COMMODITIES
26	NIFTY CONSUMPTION
27	NIFTY FIN SERVICE

28	NIFTY50 DIV POINT
29	NIFTY100 LIQ 15
30	NIFTY CPSE
31	NIFTY GROWSECT 15
32	NIFTY50 TR 2X LEV
33	NIFTY50 PR 2X LEV
34	NIFTY50 TR 1X INV
35	NIFTY50 PR 1X INV
36	NIFTY50 VALUE 20
37	NIFTY100 QUALTY30
38	NIFTY MID LIQ 15
39	NIFTY PVT BANK
40	NIFTY GS 8 13YR
41	NIFTY GS 10YR
42	NIFTY GS 10YR CLN
43	NIFTY GS 4 8YR
44	NIFTY GS 11 15YR
45	NIFTY GS 15YRPLUS
46	NIFTY GS COMPSITE
47	NIFTY50 EQL WGT
48	NIFTY100 EQL WGT
49	NIFTY100 LOWVOL30
50	NIFTY ALPHA 50
51	NIFTY MIDCAP 150
52	NIFTY SMALLCAP 50
53	NIFTY SMALLCAP 250
54	NIFTY MIDSMALLCAP 400
55	NIFTY200 QUALITY 30
56	NIFTY FINSRV25 50
57	NIFTY ALPHALOWVOL
58	NIFTY200MOMENTM30
59	NIFTY100ESGSECLDR
60	NIFTY HEALTHCARE
61	NIFTY CONSUR DURBL

62	NIFTY OIL AND GAS
63	NIFTY500MULTICAP
64	NIFTY LARGEMID250
65	NIFTY MID SELECT
66	NIFTY TOTAL MKT
67	NIFTY MICROCAP250
68	NIFTY IND DIGITAL
69	NIFTY100 ESG
70	NIFTY M150 QLTY50
71	NIFTY INDIA MFG
74	NIFTY200 ALPHA 30
75	NIFTYM150MOMNTM50
76	NIFTY TATA 25 CAP
77	NIFTY MIDSML HLTH
78	NIFTY MULTI MFG
79	NIFTY MULTI INFRA

List of Dummy indices:

Index Token	Index Name
72	INDEX1 NSETEST
73	INDEX2 NSETEST

8. Data Field Details

8.1 Security Token Number

The Security Token numbers uniquely identify each security listed on the National Stock Exchange of India Ltd. The token number, Symbol and Series identify a single and unique security. The Info Vendor will be provided with a binary file i.e. securities.dat giving the combinations of all securities traded on the Exchange. Any further additions, modifications and deletions will be updated in securities.dat file as part of the feed in /<Product Root>/Security directory.

8.2 Timestamp

The timestamp is the number of seconds elapsed from midnight Jan 1, 1980.

9. Notes

9.1 All prices are in Paisa

All price fields are multiplied by 100 and this implies that the prices received by the Info Vendors must be divided by 100.

For India VIX index, the index value is of four decimal precisions. Hence, the values received by the Info Vendors for the India VIX index must be divided by 10000.

9.2 Call Auction Market and Reserved Market

Two new market types have been added in Capital Market segment. The first market has been added to support Call Auctions and the other market type has been added for future use. It has been termed as reserved market.

9.3 Market Maker & Buy Back Flag (MMBB Flag)

For the probable values of BBMM flag refer the table given below

1. **Sell BBMM Flag:** Buy Back or Market Maker order at that price point.
2. **Buy BBMM Flag:** Buy Back or Market Maker order at that price point.

Buy_Back_Order Exists	Market_Maker_Order Exists	Sell BBMM Flag/ Buy BBMM Flag
No	No	'0'
Yes	No	'1'
No	Yes	'2'
Yes	Yes	'3'

E.g. If Buy Back and Market Maker orders exist at particular price point then the above fields will contain '3'.

10. About SFTP (Secure File Transfer Protocol)

The file transfer takes place over SFTP (Secure FTP) protocol over the Internet.

The Info Vendor requires to provide the Exchange with the SSH RSA Public Key of their machine for receiving login details form the Exchange.

The following details will be provided once the request is processed by the Exchange:
- Server IP
- SSH Service Port
- User ID
- File Path

General information on SFTP has been provided in the following sections for popular OS platforms.

10.1 SFTP on Linux platform

The OpenSSH suite, which comes pre-installed in most Linux distributions, can be used for transferring files securely using SFTP.

The SSH key-pair is generally generated in the ".ssh" directory in the user's home directory.

It is highly recommended that you consult your systems administrator to generate/locate the key-pair and set up SFTP for you.

Continue reading for information on how to generate the key-pair.

10.1.1. Generation of the SSH RSA key-pair on Linux

- Generate the new key-pair with following command:
  ```
  ssh-keygen -t rsa -C "user@host"
  ```

- You will receive the following prompt:
  ```
  Generating public/private rsa key pair.
  "Enter file in which to save the key".
  ```
  Press the Enter to continue with the defaults.

  You will receive the following prompt:
  ```
  Enter file in which to save the key
  (/host/users/user/.ssh/id_rsa):
  ```
  Press the Enter to continue with the defaults.

- If a file already exists with the same name, then you will receive the following prompt:
  ```
  /host/users/user/.ssh/id_rsa already exists.
  Overwrite (y/n)?
  ```
  Type "y" and press Enter to overwrite.

- You will be prompted to enter a passphrase as follows:
  ```
  Enter passphrase (empty for no passphrase):
  ```
  Press Enter to continue without a passphrase.

  Your will be prompted to re-enter the passphrase:
  ```
  Enter same passphrase again:
  ```
  Press Enter again to continue without a passphrase.

- After you enter a passphrase, you will be presented with the "Fingerprint" (or ID) of your SSH key.

  It will look something like this:
  ```
  Your identification has been saved in
  /host/users/user/.ssh/id_rsa.
  Your public key has been saved in
  /host/users/user/.ssh/id_rsa.pub.
  The key fingerprint is:
  87:c4:85:90:91:16:39:de:c2:26:49:4a:b3:38:80:97 user@host
  ```

  After generating public key, user needs to share the Public Key file with exchange for requesting the credentials.

NOTE: In above steps the words "host" and "user" are used to represent the host name and username of the machine. This is used for demo purpose only. The same will differ as per your server and usernames.
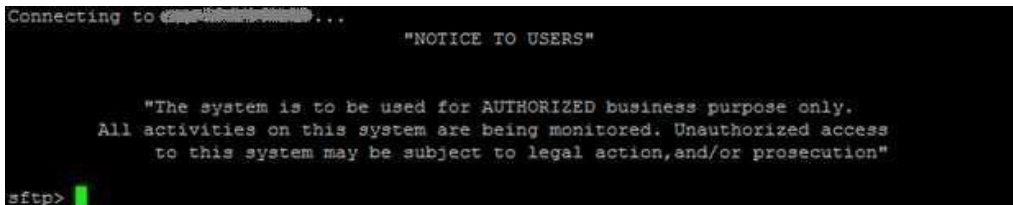
10.1.2. SFTP Login

Login to the Exchange Server over SFTP using the following command:
```
sftp -o PORT=6010 remote_user@remote_host
```

Where remote_user is the User ID provided to you by the Exchange upon sharing your Public Key and remote_host is the Exchange Server IP.
You should get the SFTP prompt as below, upon successful login:

10.1.3. Fetching files over SFTP

The SFTP "get" command may be used at the SFTP prompt for fetching the files while logged into the host over SFTP.

10.1.4. Ending the SFTP session

The SFTP "bye" command may be used for terminating the session

10.1.5. SFTP commands help

Help may be obtained with SFTP commands by typing the "help" command at the SFTP prompt.

10.2 SFTP on Windows platform

10.2.1. Generation of the SSH RSA key-pair on Windows

This guide explains how to generate the SSH RSA key-pair using the PuttyGen application.

Download the PuttyGen application (freely available on the Internet). Then follow these steps to generate the key-pair:

• Start the PuttyGen application.
   You will be presented with a dialog which looks something like this:

- Select "SSH2RSA" with 2048-bit size or greater.

- Press the "Generate" button.

- After generating the key, you will be shown the screen below.
  Keep the "Key passphrase" and "Confirm passphrase" as blank.
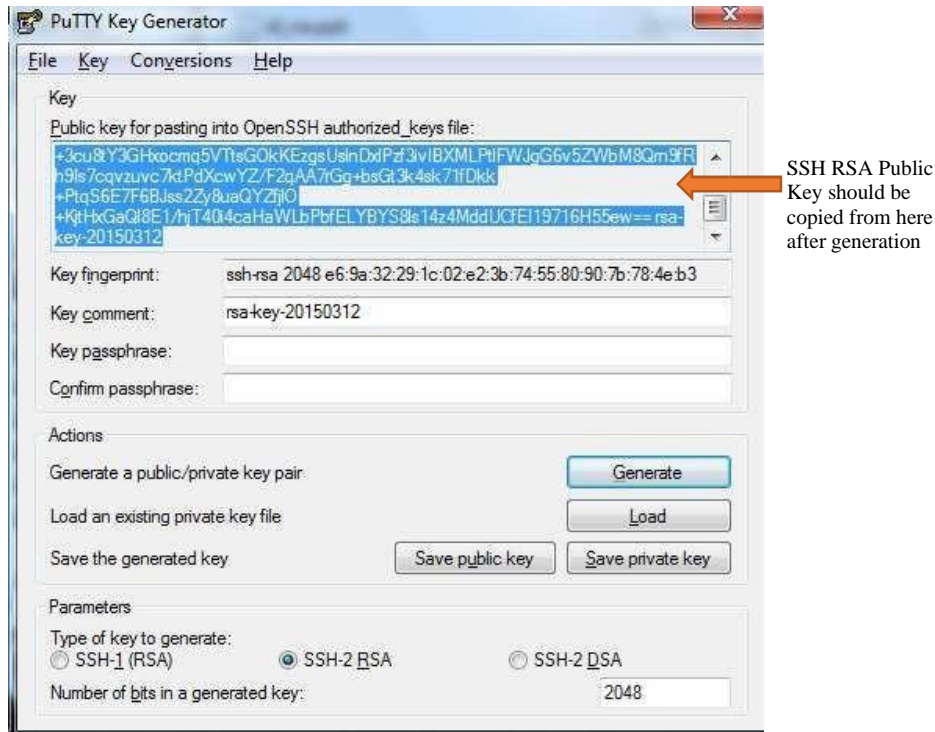
- Create a blank file with the name "id_rsa.pub".
  This will be the public key file which will be populated with your Public Key and shared with the Exchange.

- Copy the public key content as presented on the screen (selected area in the below screenshot) and paste into newly created public key file (id_rsa.pub) and save the file.

- Share this Public Key File (id_rsa.pub) with the Exchange when requesting for SFTP credentials.

10.2.2. SFTP Client Software on Windows

There are multiple SFTP Client Programs (paid for and free) available for transferring files over SFTP.

One such software is WinSCP, available for free from the WinSCP website.

This program is intuitive, user friendly and can be used in interactive mode (GUI) as well as from the command line (for automation/batch processing).

Information on using WinSCP can be found on the WinSCP website.

10.3 Further support

Apart from the above guide, many of the online resources can be referred on the World Wide Web for more information on how to set up and use SFTP at the Client's site on various OS platforms.

Note: This "About SFTP" section is intended as a guide used to understand and become familiarized with this transfer protocol.

It may be noted that the Exchange does not provide SFTP software or support for configuring and using SFTP at Client site.

11. Decoding Snapshot files

Please refer following C snippet for decoding snapshot files:

```c
HEADER header    = {0};
DATA_MBP data_mbp = {0};
DATA_CA1 data_ca1 = {0};
DATA_CA2 data_ca2 = {0};
DATA_IND data_ind = {0};
TRAILER trailer  = {0};

int main()
{
 gzFile  fpFile = gzopen("1.mkt.gz", "rb");
 while
 {
     int nRetVal = gzread(fpFile, &header ,sizeof(HEADER));
     if(header.nTranscode == MBP)
     {
         gzread(fpFile, &data_mbp, sizeof(data_mbp));
         print(&data_mbp);
     }

     else if(header.nTranscode == CA1)
     { gzread(fpFile, &data_ca1, sizeof(data_ca1)); }

     else if(header.nTranscode == CA2)
     { gzread(fpFile, &data_ca2, sizeof(data_ca2)); }

     else if(header.nTranscode == IND)

     { gzread(fpFile, &data_ind, sizeof(data_ind)); }

     nRetVal = gzread(fpFile, &trailer, sizeof(TRAILER));
     if(gzeof(fpFile) == 1)
     {
             printf("EOF reached ");
             break;
     }
 }
 gzclose(fpFile);
}

void print(DATA_MBP *data_mbp)
{
 printf("Security Token = %d ,Last Traded Price = %d,
 Best Buy Quantity = %d,  ....." ,data_mbp->SecurityToken,
 data_mbp->LastTradedPrice,data_mbp->BestBuyQuantity);
}
```

12. FAQs

1) Download of files through SFTP was working till last week, suddenly our connection to sftp is failing. How do we resolve it?

   If using SFTP on Windows, please ensure you are using the latest version of Winscp or any other equivalent tool.

   If you are using SFTP programmatically or through an API, please ensure you **don't use the following cipher**:

   - diffie-hellman-group-exchange-sha1
   - diffie-hellman-group14-sha1
   - diffie-hellman-group1-sha1

2) How do we decode compressed *.mkt and *.oi files?

   Please refer section 11 for decoding Snapshot Files, which involves decompression and reading of *.mkt and *.oi files.

13. Contact Information

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