MARKET FEED
Futures and Options (FO)
(15 Mins Delayed Snapshot)

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Revision History

Name	Description	Date
Version 1.0	Final Specification Issued	23 April 2015
Version 1.1	15-Min Delayed Product details added	06 November 2015
Version 1.2	Addition of FAQs Section and Decoding Snapshot files	20 September 2024
Version 1.3	Data type change for Date field in 4.3 Contract Information from long to unsigned long	07 April 2025
Version 1.4	Data type size change for Open Interest field in 4.2 Open Interest Information and 4.4 Bhavcopy Information to CHAR [12]	02 September 2025
Version 1.5	1. Introduction of pre-open session 2. Renamed Security.dat to Contract.dat in section 5.3: Contract Information 3. Addition of Price discovery indicator in Contract Status in 4.1 Market Information 4. Addition of 2 FAQs in FAQ section.	08 December 2025
Version 1.6	1. Added 1 FAQ in FAQ section 2. Permitted to Trade field added in section 4.3 Contract information	06 July 2026
Version 1.7	1. Addition of section 4.3 CAS Reference Price Information 2. Addition of transcode number in section 5 File Transcode List 3. Addition of Closing Auction Session (CAS) and VWAP in section 10.1 Acronyms Used. 4. Addition of section 7.2 Closing Auction session 5. Removal of Filler field from Info Header (Info Header length reduced from 9 to 8 bytes) in section 4.1 Market Information and 4.2 Open Interest Information	03 August 2026

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Market Feed – Futures and Options (15 Minutes Snapshot)

1 Introduction

NSE Data & Analytics Ltd. offers real-time data and historical data products from NSEIL to a diverse range of clients. This includes 5 real-time products and 2 historical data products:

Real Time data products

1. Real Time Data
2. Snapshot Data
3. Corporate Data
4. Analytical Products data
5. Indicative NAV Data

Historical data products

1. End of Day Data
2. Historical Data

The data products are provided through delivery modes mentioned below:

- **Real-time and Snapshot Data**: The information is transmitted as a packet broadcast, facilitating ongoing distribution through data feeds via point-to-point leased line and the snapshot data through SFTP protocol.

- **End-of-Day and Historical Data**: The data is delivered as downloadable files over the internet using the SFTP protocol and through cloud.

All these data categories are integrated within the Infofeed platform, ensuring comprehensive coverage and streamlined access.

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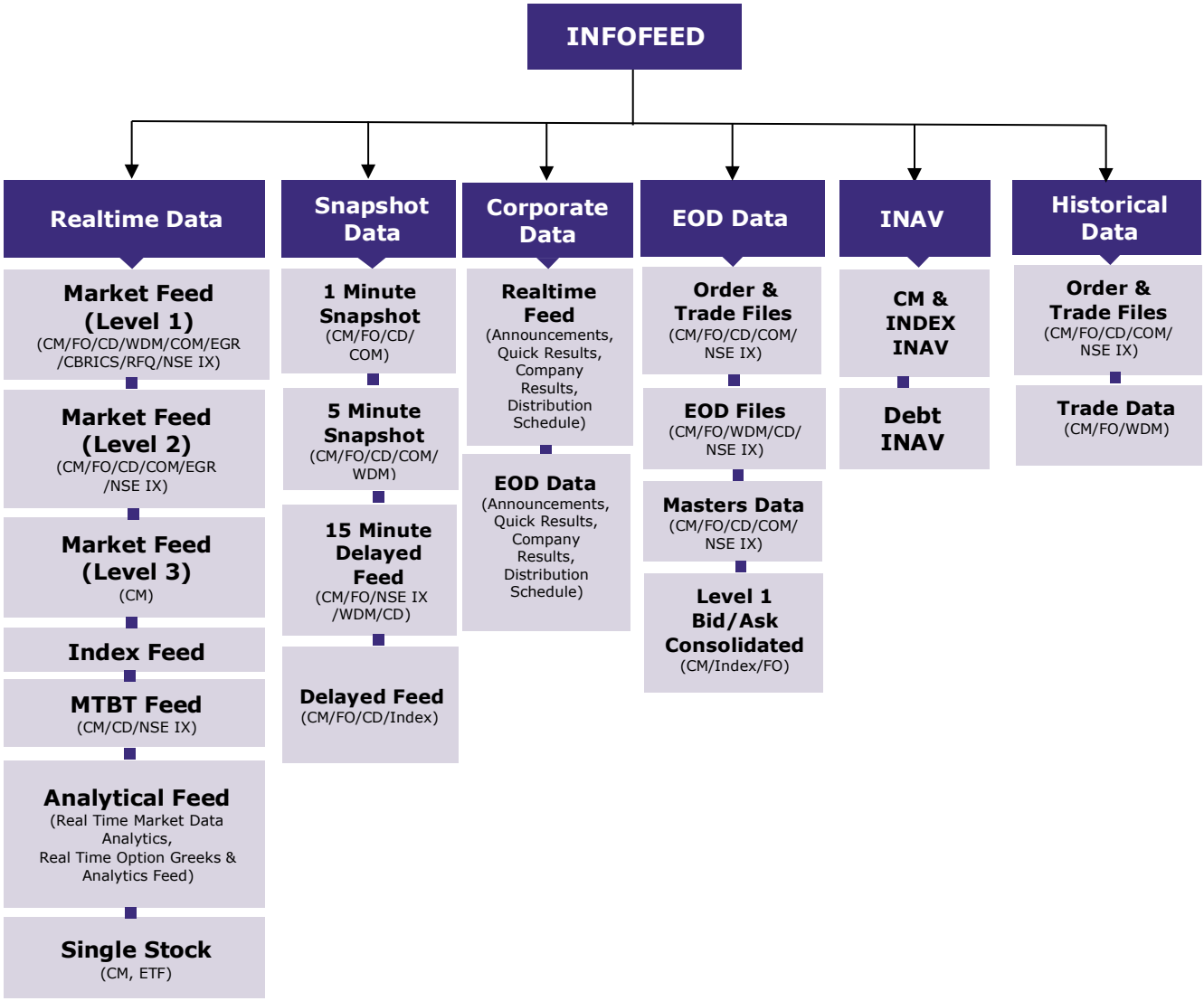


NSE Data & Analytics Ltd. (NDAL) provides a comprehensive suite of real-time and historical market data products sourced from NSEIL, supporting a wide range of analytical, regulatory, and archival use cases across the Capital Market (CM), Futures & Options (FO), Currency Derivatives (CD), Commodity Derivatives (COM), and NSE IX segments. These products deliver both high-frequency intraday information and structured end-of-day datasets to meet diverse client requirements.

This document explains the NSE 15 minutes delayed FAO Snapshot product, which provides market and open interest information. The data is delivered in file format via SFTP at a specified frequency. The files on this server are generated with 15 minutes delay on regular 1 minute interval basis.

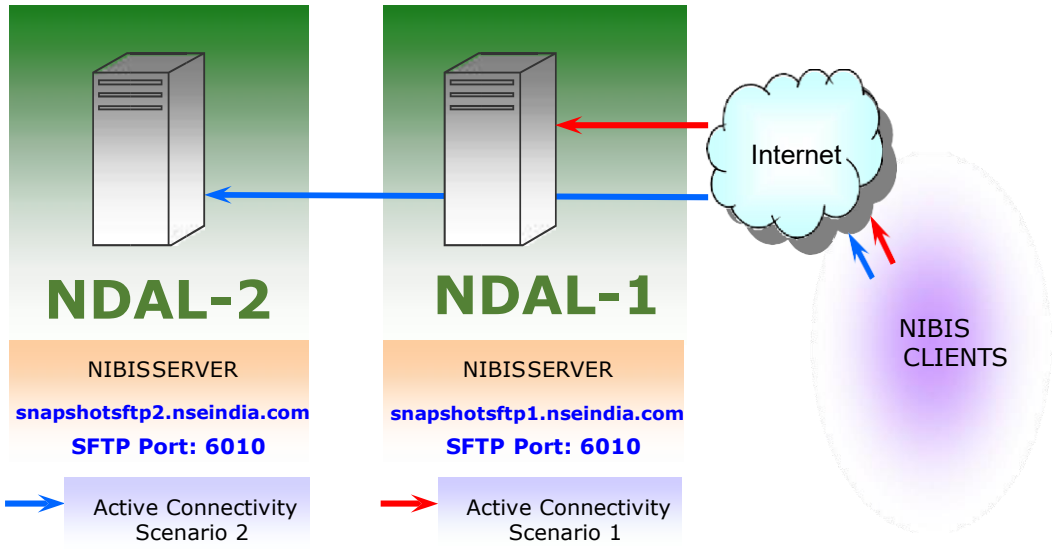
2. Connection Details

The clients connect to the NIBIS (NSEIL's Internet Based Information System) server over the Internet and use the SFTP protocol to download the files.

To gain access, clients must submit their server's public key and static public IP address. Upon verification, credentials are issued and remain valid for the duration specified in the service agreement.

Within the NSE premises, two NIBIS Production Servers operate in an active-active configuration. Each server is accessible via two IP addresses to ensure ISP-level redundancy, as illustrated in the Structural Diagram. If a server becomes unreachable through both of its IP addresses, the client software must automatically fail over to the other server.

2.1. Structural Diagram



2.2 Data Types

Data Type	Size In Bytes
CHAR	1
SHORT	2
LONG	4
UNSIGNED LONG	4

Byte order - Little Endian

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2.3 Platform notes

1. Both the servers (Primary and Secondary) operate in an active-active configuration. Clients should be capable of establishing concurrent connections to both servers. If one server is unavailable for connection or is not generating data, clients may continue to receive the subscribed data from the other server.
   If both servers are unavailable, clients are advised to contact the support team via email or the designated contact number. The relevant email ID and contact details are provided in the Contact Information section.
2. 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.
3. Time stamp on the files on the server is in 24-hour format.

2.4 SFTP Connection Details

Segment	Server	URL	Port
FO	Primary	snapshotsftp1.nseindia.com	6010
	Secondary	snapshotsftp2.nseindia.com	6010

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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
15 Minutes Delayed Snapshot Product	Every 1 Minute, delayed by 15 Minutes	/FAO30

The Product Roots may further contain subdirectories as specified in the relevant sections of this document. Clients 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
Open Interest Information Files	At a specific interval
CAS Reference Price Information Files	At a specific interval
Contract 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.

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.

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4 Sequenced Data Message

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

4.1 Market Information

The *.sec ("*" stands for a number) files contain market statistics and order information of the contracts that are being traded during the last interval, including their open, high, low and close price. The file contains a single record for every contract that is traded during that file interval. These files are generated from 09:15 To 15:30 IST. These files are generated in incremental count number on a trading day starting from 1 (for example, 1 sec, 2 sec and so on).

Directory Path	/<Product Root>/DATA/<MonthDDYYYY>
File Name	*.sec
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 sent.
Timestamp	LONG	Numeric	Internal exchange system logging time used for message sequencing and processing; not indicative of matching or execution time.
Message Length	SHORT	Numeric	Size of (INFO HEADER + INFO DATA)
~~Filler~~	~~CHAR [1]~~	~~Character~~	~~Filler~~
Info Header Length		~~9~~ 8 Bytes	
INFO DATA			
Contract Token	LONG	Numeric	Each token number is unique, and it indicates a unique contract.
Instrument Name	CHAR [6]	Character	'FUTSTK' - Stock Futures 'OPTSTK' - Stock Options 'FUTIDX' - Index futures 'OPTIDX' - Index Options 'FUTINT' - Interest Futures 'UNDINT' - Interest Underlying
Symbol	CHAR [10]	Character	This field contains the symbol of contract.

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Expiry Date	CHAR [11]	Character	Expiry date indicates the last day till which a particular contract is available for trading. Expiry date in number of seconds elapsed from midnight 01-Jan-1980.
Strike Price	CHAR [10]	Character	The value will be in paisa for Options, and the value will be '-1' for Futures contracts
Option Type	CHAR [2]	Character	Describes the option type for option contracts. 'CA' – Call American 'CE' – Call European 'PE' – Put European 'PA' – Put American 'A' indicates American option on which settlement can be done on any day till the expiry day. 'E' indicates European option for which settlement can be done only on expiry day. It will be 'XX' for Futures contracts
Market Type	CHAR [1]	Character	This field contains one of the following values. • '1' for Normal market • '2' for Odd lot market • '3' for Spot market • '4' for Auction market
Best Buy Price	CHAR [10]	Character	The highest price for a Buy order.
Best Buy Quantity	CHAR [12]	Character	This field contains the total Buy Quantity for the order.
Best Sell Price	CHAR [10]	Character	This is the lowest price for a Sell order.
Best Sell Quantity	CHAR [12]	Character	This field contains the total Sell quantity for the order.
Last Traded Price	CHAR [10]	Character	This represents the last traded price for contract. In the absence of any trade during the day, the system will default to the previous day's last traded price; if unavailable, the base price is applied.
Total Traded Quantity	CHAR [12]	Character	Represents the aggregate quantity of a contract traded on the current day. TTQ = Number of Contracts Traded * Lot Size

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Average Traded Price	CHAR [10]	Character	This field contains the average price of all the trades in a contract.
Contract Status	CHAR [1]	Character	This field can have any one of the following values: • '1' - Preopen • '2' - Open (Only for Normal market) • '3' - Suspended • '4' - Preopen extended • '5' - Stock Open with Market • '6' – Price discovery
Open Price	CHAR [10]	Character	This field contains the open price of a contract.
High Price	CHAR [10]	Character	This field contains the highest trade price.
Low Price	CHAR [10]	Character	This field contains the lowest trade price.
Close Price	CHAR [10]	Character	This field contains the closing price of a contract.
Interval High Price	CHAR [10]	Character	This field contains the highest trade price during interval.
Interval Low Price	CHAR [10]	Character	This field contains the lowest trade price during interval.
Interval Open Price	CHAR [10]	Character	This field contains the open price of a contract during interval.
Interval Close Price	CHAR [10]	Character	This field contains the closing price of a contract during interval.
Interval Total Traded Quantity	CHAR [12]	Character	This field contains the total quantity of a contract traded during interval.
Info Data Length		**213 Bytes**	

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4.2 Open Interest Information

The *.ind ("*" stands for a number) files contain the details of open interest information of contracts. These files are generated at regular intervals. These files are generated from 09:15 IST to 15:30 IST.

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 sent.
Timestamp	LONG	Numeric	Internal exchange system logging time used for message sequencing and processing; not indicative of matching or execution time.
Message Length	SHORT	Numeric	Size of (INFO HEADER + INFO DATA)
~~Filler~~	~~CHAR [1]~~	~~Character~~	~~Filler~~
Info Header Length		~~9~~ 8 Bytes	
INFO DATA			
Contract Token	LONG	Numeric	Each token number is unique, and it indicates a unique contract.
Instrument Name	CHAR [6]	Character	'FUTSTK' - Stock Futures 'OPTSTK' - Stock Options 'FUTIDX' - Index futures 'OPTIDX' - Index Options 'FUTINT' - Interest Futures 'UNDINT' - Interest Underlying
Symbol	CHAR [10]	Character	This field contains the symbol of contract.
Expiry Date	CHAR [11]	Character	Expiry date indicates the last day till which a particular contract is available for trading. Expiry date in number of seconds elapsed from midnight 01-Jan-1980.
Strike Price	CHAR [10]	Character	The value will be in paisa for Options, and the value will be '-1' for Futures contracts.

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Option Type	CHAR [2]	Character	Describes the option type for option contracts. 'CA' – Call American 'CE' – Call European 'PE' – Put European 'PA' – Put American 'A' indicates American option on which settlement can be done on any day till the expiry day. 'E' indicates European option for which settlement can be done only on expiry day. It will be 'XX' for Futures contracts
Open Interest	CHAR [12]	Character	Total number of outstanding contracts not yet closed or settled.
Market Type	CHAR [1]	Character	This field contains one of the following values. • '1' for Normal market • '2' for Odd lot market • '3' for Spot market • '4' for Auction market
Info Data Length		**56 Bytes**	

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4.3 CAS Reference Price Information

The *.car ("*" stands for a number) files contains CAS reference price information sent for stock future contracts eligible in CAS.

Directory Path	/<Product Root>/DATA/<MonthDDYYYY>
File Name	*.car
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 sent.
Timestamp	LONG	Numeric	Internal exchange system logging time used for message sequencing and processing; not indicative of matching or execution time.
Message Length	SHORT	Numeric	Size of (INFO HEADER + INFO DATA)
Info Header Length		**8 Bytes**	
INFO DATA			
Contract Token	LONG	Numeric	This field contains the token number
Instrument Name	CHAR [6]	Character	'FUTSTK' - Stock Futures 'OPTSTK' - Stock Options 'FUTIDX' - Index futures 'OPTIDX' - Index Options 'FUTINT' - Interest Futures 'UNDINT' - Interest Underlying
Symbol	CHAR [10]	Character	This field contains the symbol of contract.
Expiry Date	CHAR [11]	Character	Expiry date indicates the last day till which a particular contract is available for trading. Expiry date in number of seconds elapsed from midnight 01-Jan-1980
Strike Price	CHAR [10]	Character	The value will be in paisa for Options, and the value will be '-1' for Futures contracts.

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Option Type	CHAR [2]	Character	Describes the option type for option contracts. 'CA' – Call American 'CE' – Call European 'PE' – Put European 'PA' – Put American 'A' indicates American option on which settlement can be done on any day till the expiry day. 'E' indicates European option for which settlement can be done only on expiry day. It will be 'XX' for Futures contracts.
Reference Price	CHAR [10]	Character	The reference price of a stock future contract shall be determined based on the VWAP of the trades executed in the stock future from 3:00 p.m. to 3:15 p.m. If no trade is executed in the stock future from 3:00 p.m. to 3:15 p.m., LTP of the stock future during the day shall be taken as reference price. In case there is no trade during the day, prevailing theoretical price (based on cash market LTP at 3:15 p.m.) of the stock future shall be taken as the reference price. In case underlying security in cash market is not traded i.e. LTP is not available, base price of the respective future contract shall be taken as reference price.
Info Data Length		**53 Bytes**	

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4.4 Contract Information

The Contract.dat file is the master file that contains the updated information of all contracts traded on the Exchange. The clients need to download this file and decode it to resolve the "token number" of required contract. The Token number of each contract is unique.

Directory Path	/<Product Root>/CONTRACT/<MonthDDYYYY>
File Name	Contract.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 sent.
Timestamp	LONG	Numeric	Internal exchange system logging time used for message sequencing and processing; not indicative of matching or execution time.
Message Length	SHORT	Numeric	Size of (INFO HEADER + INFO DATA)
Info Header Length		**8 Bytes**	
INFO DATA			
Token Number	LONG	Numeric	Each token number is unique, and it indicates a unique contract.
Instrument Name	CHAR [6]	Character	'FUTSTK' - Stock Futures 'OPTSTK' - Stock Options 'FUTIDX' - Index futures 'OPTIDX' - Index Options 'FUTINT' - Interest Futures 'UNDINT' - Interest Underlying
Symbol	CHAR [10]	Character	This field contains the symbol of contract.
Series	CHAR [2]	Character	It is not used in FO segment. So, default value is 'XX'.

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Option Type	CHAR [2]	Character	Describes the option type for option contracts. 'CA' – Call American 'CE' – Call European 'PE' – Put European 'PA' – Put American 'A' indicates American option on which settlement can be done on any day till the expiry day. 'E' indicates European option for which settlement can be done only on expiry day. It will be 'XX' for Futures contracts.
Expiry Date	UNSIGNED LONG	Numeric	Expiry date indicates the last day till which a particular contract is available for trading. Expiry date in number of seconds elapsed from midnight 01-Jan-1980
Strike Price	LONG	Numeric	The value will be in paisa for Options, and the value will be '-1' for Futures contracts.
Issue Start Date	UNSIGNED LONG	Numeric	Indicates the date on which the particular contract was introduced.
Issue Maturity Date	UNSIGNED LONG	Numeric	It is same as the expiry date and indicates the last day up to which the contract is available for trading. It can be extended under special circumstances.
Board Lot Quantity	LONG	Numeric	The quantity entered while placing a Buy/Sell order should be a multiple of board lot quantity and greater than the minimum lot size.
Tick Size	LONG	Numeric	Tick size of the contract.
Contract Name	CHAR [25]	Character	Name of the contract
Record Date	UNSIGNED LONG	Numeric	It represents the cutoff date for shareholders to be eligible for specific corporate action.
Ex Date	UNSIGNED LONG	Numeric	Last date of trading before any corporate action.
No Delivery Start Date	UNSIGNED LONG	Numeric	Date from when delivery of shares is stopped for book closure

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No Delivery End Date	UNSIGNED LONG	Numeric	No delivery end date.
Book Closure Start Date	UNSIGNED LONG	Numeric	Date at which the record books in the company for shareholder names starts.
Book Closure End Date	UNSIGNED LONG	Numeric	Date at which the record books in the company for shareholder names ends
Remarks	CHAR [25]	Character	Remarks.
Category	CHAR [1]	Character	Market hours in which the contract is available to trade. •'1': Regular market hours. •'2': Extended market hours.
Filler	CHAR [1]	Character	Filler
Permitted To Trade	CHAR [1]	Character	'0' - Listed but not permitted to trade '1' - Permitted to trade '2' - BSE listed (Refer to FAQ4 for more details)
Info Data Length		**125 Bytes**	

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4.5 Bhavcopy Information

The Bhavcopy Information File is generated at around 17:00 IST on each trading day. This file contains the End of the Day values of the contracts that are traded on that trading day.
This data file does not contain the Header field.

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

Field Name	Data Type	Value	Brief Description
INFO DATA			
Instrument Name	CHAR [6]	Character	'FUTSTK' - Stock Futures 'OPTSTK' - Stock Options 'FUTIDX' - Index futures 'OPTIDX' - Index Options 'FUTINT' - Interest Futures 'UNDINT' - Interest Underlying
Symbol	CHAR [10]	Character	This field contains the symbol of contract.
Expiry Date	CHAR [11]	Character	Expiry date indicates the last day till which a particular contract is available for trading. Expiry date in number of seconds elapsed from midnight 01-Jan-1980.
Strike Price	CHAR [10]	Character	The value will be in paisa for Options, and the value will be '-1' for Futures contracts
Option Type	CHAR [2]	Character	Describes the option type for option contracts. 'CA' – Call American 'CE' – Call European 'PE' – Put European 'PA' – Put American 'A' indicates American option on which settlement can be done on any day till the expiry day. 'E' indicates European option for which settlement can be done only on expiry day. It will be 'XX' for Futures contracts.

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Market Type	CHAR [1]	Character	This field contains one of the following values. • '1' for Normal market • '2' for Odd lot market • '3' for Spot market • '4' for Auction market
Opening Price	CHAR [10]	Character	This field contains the open price of a contract
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
Closing Price	CHAR [10]	Character	This field contains the closing price of a contract
Last Traded Price	CHAR [10]	Character	This field contains the price at which the latest trade in a contract has taken place.
Previous Close Price	CHAR [10]	Character	This field contains the previous day's closing price of the contract
Settlement Price	CHAR [10]	Character	Settlement Price
Total Traded Quantity	CHAR [12]	Character	Represents the aggregate quantity of a contract traded on the current day. TTQ= Number of Contracts Traded * Lot Size
Total Traded Value	CHAR [25]	Character	This field contains the total quantity of a contract traded on the current day
Current Open Interest	CHAR [12]	Character	This field contains the Current Open Interest of the underlying asset.
Change in Open Interest	CHAR [12]	Character	This field contains the change in value of open interest.
Info Data Length		**171 Bytes**	

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5 File Transcode List

Details	Transcode Number
MARKET OPEN INFORMATION	1
OPEN INTEREST INFORMATION	2
CONTRACT INFORMATION	3
MARKET PRE-OPEN INFORMATION	4
CAS REFERENCE PRICE INFORMATION	5

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6 Data Field Details

6.1 Contract Token Number

Each contract listed in the Futures and Options (F&O) segment is uniquely identified by following attributes mentioned below:

Futures Contracts
A Futures contract is uniquely defined by the combination of:

- Token Number
- Instrument Type
- Symbol
- Expiry Date

Options Contracts
An Options contract is uniquely defined by the combination of:

- Token Number
- Instrument Type
- Symbol
- Expiry Date
- Strike Price
- Option Type (Call/Put)

Clients are provided with a binary file named Contract.dat, which contains details of all contracts traded on the Exchange.

6.2. Timestamp

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

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7 Notes

7.1 Pre-Open session

Pre-open session will be conducted for the Normal Market segment. The session will be conducted before the normal market start time. Exchange may decide to allow all or selective contracts in pre-open session.

During the Pre-open session, only order entry, orders modification and order cancellation will be allowed. Once the pre-open session ends, no order activity will be allowed and the final open price (i.e. equilibrium price based on accumulated buy and sell orders) will be computed. Pre-open orders will be matched at this final open price resulting in trade execution.

Pre-open orders that could not participate in the pre-open matching for reasons such as a demand-supply gap, order price worse than the equilibrium price etc. shall be carried forward to the normal market. The time priority of such orders shall be retained.

In the above context NSE – 15 minutes delayed snapshot product sends messages in the following format:

Market Pre-open Information (.sec): During the pre-open session, a .sec file will be generated with transcode 4.

7.2 Closing Auction session

Closing Auction session applies only to the equity segment. To keep the applicable price band aligned between Equity and Equity Derivative segments, the price band for stock futures will be reset before CAS.
The price band for all stock futures contracts will be set at ±3% of the reference price computed post 3:15 p.m. during normal market hours.
The equity derivatives segment timings will be extended until 3:40 PM and it is applicable for both index and stock derivatives contracts.

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8 SFTP Access, Setup and Usage

File transfer of FAO Snapshot takes place over SFTP (Secure File Transfer Protocol) over the Internet.

8.1 Client Inputs and Prerequisites

The client shall provide the following details with NSE Data & Analytics Limited (NDAL):

- SSH RSA Public Key of the client machine
- Static public IP address for SFTP access

These details are mandatory for enabling secure access.

Only the public key (id_rsa.pub) shall be shared with NDAL after the successful generation of the key pair (public and private keys).

8.2 NDAL Deliverables

Upon successful processing, NDAL shall provide the following access details:

- SFTP server URL / host name
- SSH Port Number
- User ID (to be provisioned by NDAL)
- Remote Directory Path

8.3 General Guidelines

- File transfer shall be performed over a secure SFTP channel using SSH key-based authentication.
- Password-based authentication shall not be supported. Access shall be granted only upon successful registration of the client's SSH RSA public key with NDAL.
- Clients should ensure that the private key corresponding to the registered public key is securely stored and not shared.
- Clients are responsible for configuring their local systems and SFTP client tools for establishing the connection and downloading files.
- NDAL does not provide SFTP software or support for client-side configuration and setup.

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8.4 SFTP on Linux platform

The Open SSH 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.

8.4.1 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.

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It will look 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
```

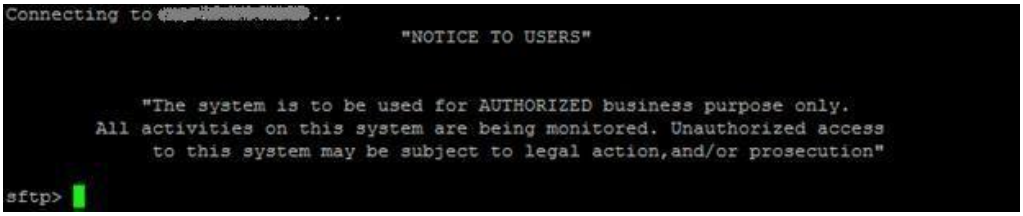
After generating public key, user needs to share the Public Key file with NDAL for requesting the credentials.

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.

8.4.2 SFTP Login

Login to the NDAL 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 NDAL upon sharing your Public Key and remote_host is the NDAL Server IP.
You should get the SFTP prompt as below, upon successful login:



8.4.3 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.

8.4.4 Ending the SFTP session

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

8.4.5 SFTP commands help

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

8.5. SFTP on Windows platform

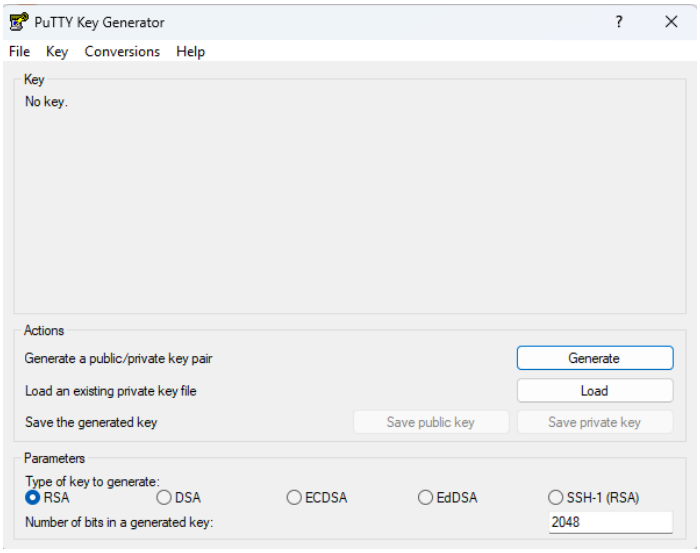
8.5.1. Generation of the SSH RSA key-pair on Windows

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 as given below:



- Select "RSA" (corresponding to SSH-2 RSA) with a key size of 2048 bits or higher.
- Click Generate and move the mouse randomly within the window.

  PuTTYgen uses these movements to collect entropy (randomness), which is essential for secure key generation. The progress bar will advance as sufficient randomness is gathered.

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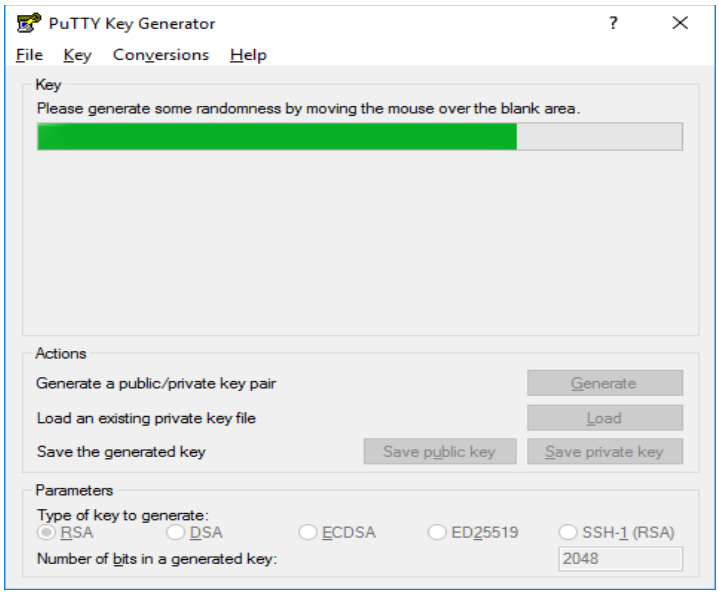
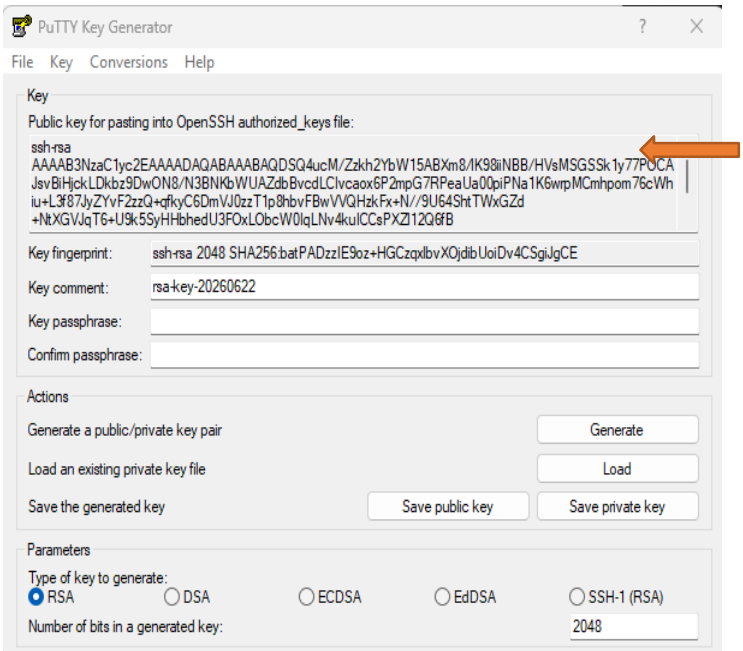


- The duration of this step may vary depending on the chosen key size. Once the progress bar is complete, PuTTYgen will begin the key generation process, which may take a few seconds to a few minutes.
- Upon completion, the generated public key will be displayed in the window.
- After generating the key, you will be shown the screen below.

  Keep the "Key passphrase" and 'Confirm passphrase" as blank.



SSH RSA Public Key should be copied from here after generation

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- 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 NDAL.
- 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 NDAL when requesting for SFTP credentials.

8.5.2. 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.

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8.6. 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 "SFTP (Secure File Transfer) Access, Setup and Usage" section is intended as a guide used to understand and become familiarized with this transfer protocol.

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9 Decoding Snapshot files

Please refer following C snippet for decoding snapshot files:

```
HEADER header    = {0};
DATA_SEC data_sec = {0};
DATA_IND data_ind = {0};

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

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

     if(gzeof(fpFile) == 1)
     {
                 printf("EOF reached ");
                 break;
     }
 }
 gzclose(fpFile);
}

void print(DATA_SEC *data_sec)
{
 printf("Contract Token = %d ,Instrument Name = %s,
 Symbol = %s, ....." ,data_sec->ContractToken,
 data_sec->InstrumentName,data_sec->Symbol);
}
```


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10 Annexure

10.1 Acronyms Used

BOD	Begin Of Day Information
EOD	End Of Day Information
ONLINE	Information Sent During Market Timing
CM	Cash Market
F&O	Future & Options Market
CD	Currency Derivatives Market
WDM	Wholesale & Debt Market
COM	Commodity Market
CBRICS	Corporate Bond Reporting and Integrated Clearing System
RFQ	Request For Quote
NSE IX	NSE International Exchange
MTBT	Multicast Tick By Tick
LTP	Last Traded Price
OI	Open Interest
MBP	Market By Price
ATO	At The Opening
TTQ	Total traded Quantity
LTQ	Last Traded Quantity
EGR	Electronic Gold Receipts
CAS	Closing Auction Session
VWAP	Volume Weighted Average Price

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11 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 *.sec and *.ind files?

   Please refer Decoding Snapshot files section for decoding Snapshot Files, which involves decompression and reading of *.sec and *.ind files.

3) What causes the sec files generated between 09:24 and 09:30 IST to be empty?

   The pre-open session runs from 09:00 to 09:15 IST and consists of two phases: the order collection period and the order matching period.

   Order Collection Period (09:00–09:08 IST):
   During the first eight minutes, orders are collected, and the sec files generated in this window contain valid data. The order collection session may close randomly anytime between the 7th and 8th minute.

   Order Matching Period (09:09–09:15 IST):
   In this phase, the exchange determines the equilibrium price. No orders or trades occur during this time, resulting in sec files that are expectedly empty.

   Since this product provides a 15-minute delayed snapshot, the sec files generated between 09:24 and 09:30 IST correspond to the 09:09–09:15 IST order-matching phase and therefore appear empty.

4) How to identify BSE listed contracts in Futures and Options segment?

   BSE exclusive contracts shall have "$" suffixed in the associated symbol field at NSE. Below are the examples.

Contract Name	Expiry Date	Strike Price	Option Type	Contract Description
Options Contracts				
NSDL$	26APR2026	143000	PE	NSDL26APR1430PE
REGAL$	26APR2026	143000	CE	REGAL26APR1430CE
BLUEJACK$$	26APR2026	143000	CE	BLUEJACK$26APR1430CE
Futures Contract				
BLUEJAC$$$	26APR2026	-	XX	BLUEJAC$$26APRFUT

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Please note that examples provided are for illustration purpose only.

All symbol fields in applicable packets in Sequenced Data Message section shall contain BSE exclusive contracts along with NSE contracts.

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12 Contact Information

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