



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

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EXCHANGE PLAZA,
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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 Contract Information from long to unsigned long	07 April 2025

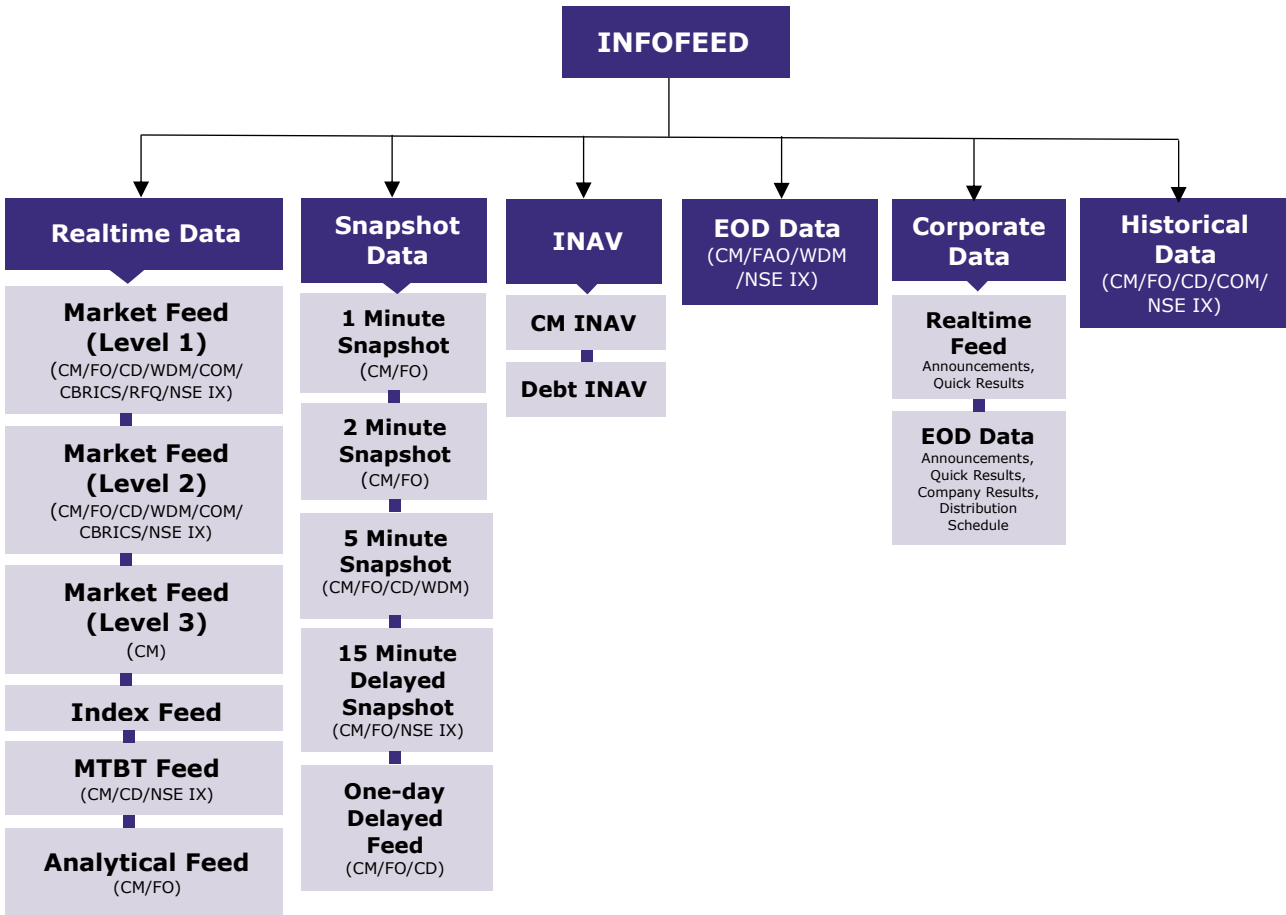
Table of Contents

1 Introduction	5
2. Connection Details.....	6
2.1. Structural Diagram.....	6
2.2 Data Types	6
2.3 Platform notes.....	7
3 Overview	8
3.1 Products and “Product Root”	8
3.2 Types of files generated	8
3.3 Compression	9
4 Data Details	10
4.1 Market Information	10
4.1.1 Market Files	10
4.1.2 OI Files	10
4.2 Contract Information	10
4.3 Bhavcopy Information	10
5 Data Structure Details	11
5.1 Market Information	11
5.2 Open Interest Information.....	14
5.3 Contract Information	15
5.4 Bhavcopy Information	17
6 File Transcode List.....	19
7 Data Field Details.....	20
7.1 Security Token Number	20
7.2. Timestamp	20
8 About SFTP (Secure File Transfer Protocol).....	21
8.1 SFTP on Linux platform	21
8.1.1 Generation of the SSH RSA key-pair on Linux.....	21
8.1.2 SFTP Login	22
8.1.3 Fetching files over SFTP	23
8.1.4 Ending the SFTP session	23
8.1.5 SFTP commands help	23
8.2. SFTP on Windows platform	23
8.2.1. Generation of the SSH RSA key-pair on Windows.....	23
8.2.2. SFTP Client Software on Windows.....	25
8.3. Further support	26
9 Decoding Snapshot files	27
10 FAQs	28
11 Contact Information	29

Market Feed – Futures and Options (15 Minutes Snapshot)

1 Introduction

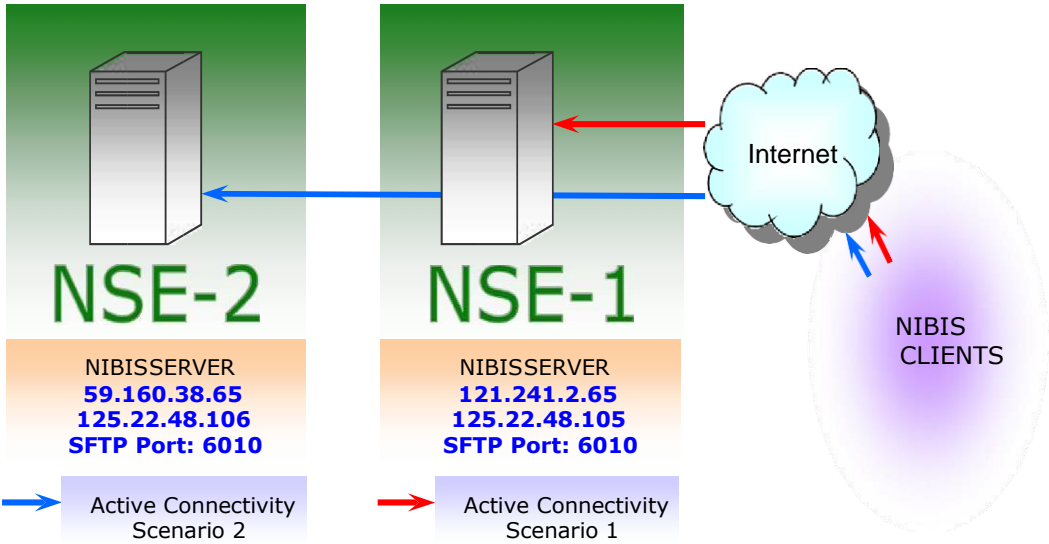
NSE Data & Analytics Ltd. disseminates NSEIL’s real time broadcast data to various information agencies. The NIBIS (NSEIL’s Internet Based Information System) server that caters the NIBIS Clients is available through internet. All NIBIS Clients are required to connect the server through internet and use SFTP protocol to download the files. The files on this server are generated with 15 minutes delay on regular 1 minute interval basis. The Clients are provided with a User ID and password that is enabled for the agreement period.



2. Connection Details

The Clients 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 client software requires to 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
DOUBLE	8
LONG LONG	8

Byte order - Little Endian

2.3 Platform notes

1. The SFTP service can be simultaneously accessed through both redundant IP addresses on each server. This is to enable clients to access the servers in case of link failure.
2. Clients 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	/FAO01
2 Minutes Snapshot Product	Every 2 Minutes	/FAO02
5 Minutes Snapshot Product	Every 5 Minutes	/FAO05
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
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.

4 Data Details

4.1 Market Information

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

4.1.1 Market Files

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 during normal trading period i.e. 09:15 IST 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).

4.1.2 OI Files

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 during normal trading period i.e. 09:15 IST to 15:30 IST.

4.2 Contract Information

The Securities.dat file is the master file that contains the updated information of all securities 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.

4.3 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 securities that are traded on that trading day.



5 Data Structure Details

5.1 Market Information

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

Field Name	Data Type	Value	Remarks
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.
Filler	CHAR [1]	Character	Filler
Info Header Length		9 Bytes	
INFO DATA			
Security Token	LONG	Numeric	This field contains the token number of contract
Instrument Name	CHAR [6]	Character	Instrument Name
Symbol	CHAR [10]	Character	Security symbol
Expiry Date	CHAR [11]	Character	Expiry Date
Strike Price	CHAR [10]	Character	Strike Price
Option Type	CHAR [2]	Character	Option Type
Market Type	CHAR [1]	Character	This field contains one of the following values. <ul style="list-style-type: none"> • '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 field contains the price at which the latest trade in a security has taken place.
Total Traded Quantity	CHAR [12]	Character	This field contains the total quantity of a security traded on the current day
Average Traded Price	CHAR [10]	Character	This field contains the average price of all the trades in a security.
Security Status	CHAR [1]	Character	This field can have any one of the following values: <ul style="list-style-type: none"> • '1' - Preopen (Only for Normal market) • '2' - Open • '3' - Suspended • '4' - Preopen extended • '5' - Stock Open with Market
Open Price	CHAR [10]	Character	This field contains the open price of a security
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 security
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 security during interval

Interval Close Price	CHAR [10]	Character	This field contains the closing price of a security during interval
Interval Total Traded Quantity	CHAR [12]	Character	This field contains the total quantity of a security traded during interval
Info Data Length		213 Bytes	

5.2 Open Interest Information

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

Field Name	Data Type	Value	Remarks
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.
Filler	CHAR [1]	Character	Filler
Info Header Length		9 Bytes	
INFO DATA			
Security Token	LONG	Numeric	This field contains the token number
Instrument Name	CHAR [6]	Character	Instrument Name
Symbol	CHAR [10]	Character	Security symbol
Expiry Date	CHAR [11]	Character	Expiry Date
Strike Price	CHAR [10]	Character	Strike Price
Option Type	CHAR [2]	Character	Option Type
Open Interest	CHAR [10]	Character	This field contains the open interest value.
Market Type	CHAR [1]	Character	This field contains one of the following values. <ul style="list-style-type: none"> • '1' for Normal market • '2' for Odd lot market • '3' for Spot market • '4' for Auction market
Info Data Length		54 Bytes	

5.3 Contract Information

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

Field Name	Data Type	Value	Remarks
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.
Instrument Name	CHAR [6]	Character	Instrument Name
Symbol	CHAR [10]	Character	This field contains the Symbol of the security.
Series	CHAR [2]	Character	This field contains the series of a security.
Option Type	CHAR [2]	Character	Option Type
Expiry Date	UNSIGNED LONG	Numeric	This field contains the last date of trading before any corporate action
Strike Price	LONG	Numeric	Strike Price
Issue Start Date	UNSIGNED LONG	Numeric	Date of issue of the security.
Issue Maturity Date	UNSIGNED LONG	Numeric	Maturity date
Board Lot Quantity	LONG	Numeric	Regular lot size.

Tick Size	LONG	Numeric	Tick size/ Min spread size
Security Name	CHAR [25]	Character	Name of the company
Record Date	UNSIGNED LONG	Numeric	Date of record changed.
Ex Date	UNSIGNED LONG	Numeric	Last date of trading before any corporate action.
No Delivery Start Date	UNSIGNED LONG	Numeric	Date from when physical delivery of share certificates is stopped for book closure
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
Info Data Length		124 Bytes	

5.4 Bhavcopy Information

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	Remarks
INFO DATA			
Instrument Name	CHAR [6]	Character	Instrument Name
Symbol	CHAR [10]	Character	Security symbol
Expiry Date	CHAR [11]	Character	Expiry Date
Strike Price	CHAR [10]	Character	Strike Price
Option Type	CHAR [2]	Character	Option Type
Market Type	CHAR [1]	Character	This field contains one of the following values. <ul style="list-style-type: none"> • '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 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
Closing Price	CHAR [10]	Character	This field contains the closing price of a security
Last Traded Price	CHAR [10]	Character	This field contains the price at which the latest trade in a security has taken place.
Previous Close Price	CHAR [10]	Character	This field contains the previous day's closing price of the security
Settlement Price	CHAR [10]	Character	Settlement Price
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 quantity of a security traded on the current day
Current Open Interest	CHAR [10]	Character	This field contains the Current Open Interest of the underlying asset.
Change in Open Interest	CHAR [10]	Character	This field contains the change in value of open interest.
Info Data Length		167 Bytes	

6 File Transcode List

Details	Transcode Number
MARKET OPEN INFORMATION	1
OPEN INTEREST INFORMATION	2
CONTRACT INFORMATION	3

7 Data Field Details

7.1 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 Client will be provided with a binary file i.e., Securities.dat giving the combinations of all securities traded on the Exchange.

7.2. Timestamp

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



8 About SFTP (Secure File Transfer Protocol)

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

The client requires to provide the Exchange with the SSH RSA Public Key of their machine for receiving login details from 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.

8.1 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.

8.1.1 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
```

```
(/home/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.

You 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.

8.1.2 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:

```
Connecting to 192.168.1.100...  
"NOTICE TO USERS"  
  
"The system is to be used for AUTHORIZED business purpose only.  
All activities on this system are being monitored. Unauthorized access  
to this system may be subject to legal action, and/or prosecution"  
  
sftp> █
```

8.1.3 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.

8.1.4 Ending the SFTP session

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

8.1.5 SFTP commands help

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

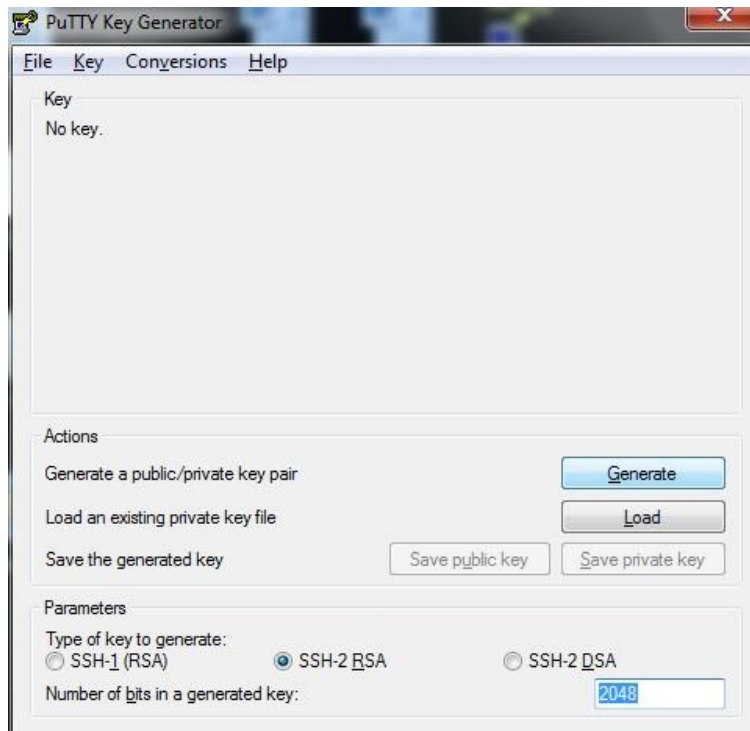
8.2. SFTP on Windows platform

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

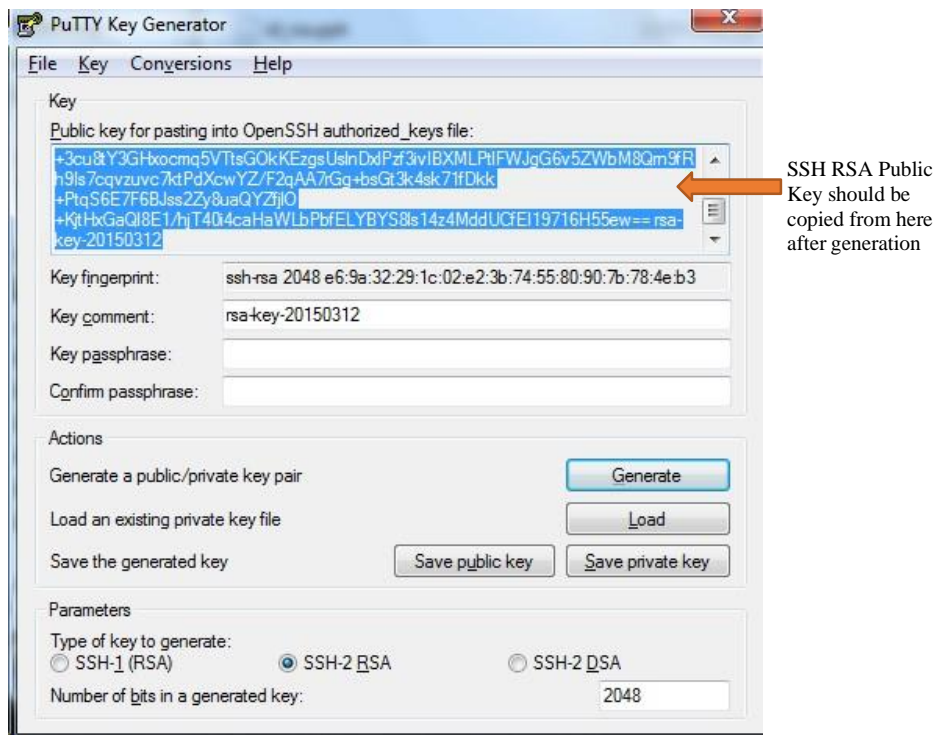
This guide explains how to generate the SSH RSA key-pair using the PuttyGen application.

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.

8.2.2. 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.

8.3. 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.



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("Security Token = %d ,Instrument Name = %s,
    Symbol = %s, ....." ,data_sec->SecurityToken,
    data_sec->InstrumentName,data_sec->Symbol);
}

```

10 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

11 Contact Information

Name	Email	Contact Number
Business & Technical Support	marketdata@nse.co.in	+91-22-26598385

