

Broadcast Specification Document For Futures and Options Trading System

Version 1.0.3

Date: - Jan '09



National Stock Exchange of India Ltd
Exchange Plaza, Plot No. C/1, G Block,
Bandra-Kurla Complex, Bandra (E),
Mumbai - 400 051.

Notice

© Copyright National Stock Exchange of India Ltd (NSEIL). All rights reserved. Unpublished rights reserved under applicable copyright and trades secret laws.

The contents, ideas and concepts presented herein are proprietary and confidential. Duplication and disclosure to others in whole, or in part is prohibited.

Preface

Purpose

This document describes the protocol to be used to receive the broadcast for Futures and Options Trading System (FOTS).

Target Audience

This document is written for system designers and programmers of user organizations and third party software developers who are responsible for the development of software to interact with NSE's Futures and Options Trading System.

Organization of This Document

This document is organized as follows:

Chapters	Description
Chapter 1	It details the data types used and also covers the Broadcast Header, MESSAGE_HEADER that is prefaced with all the structures.
Chapter 2	Describes the details of header, data and trailer of Bhav Copy.
Chapter 3	Describes the various Broadcast messages and the Compression and Decompression algorithm of Broadcast data.
Appendix	Transaction codes and also covers the various market statuses, market types and book types etc.

Abbreviations and Acronyms Used

The abbreviations and acronyms used in this document are:

AGM	Annual General Meeting
AON	All Or None
ATO	At The Opening
AU	Auction
BCID	Broadcast Circuit ID

EGM	Extraordinary General Meeting
GTC	Good Till Cancellation
GTD	Good Till Date
LTP	Last Traded Price
MBO	Market By Order
MBP	Market By Price
MF	Minimum Fill
NEAT	National Exchange for Automated Trading
NNF	Non Neat Front End
NSE	National Stock Exchange
NT	Negotiated Trade
OL	Odd Lot
RL	Regular Lot
SL	Stop Loss
ST	Special Terms
TM	Trading Member
TWS	Trader Workstation

1	CHAPTER 1 GENERAL GUIDELINES	7
1.1	INTRODUCTION.....	7
1.2	GUIDELINES FOR DESIGNERS.....	7
1.3	GUIDELINES FOR PROGRAMMERS	7
1.4	MESSAGE STRUCTURE DETAILS	8
1.5	DATA TYPES USED.....	9
1.6	MESSAGE HEADER	9
1.7	BROADCAST PROCESS HEADER	11
1.8	ERROR MESSAGE	12
1.9	STRUCTURE REFERENCE.....	13
1.9.1	Contract Descriptor structure	13
2	BHAV COPY	14
2.1	INTRODUCTION.....	14
2.2	MESSAGE STATING THE TRANSMISSION OF BHAV COPY WILL START NOW.....	14
2.3	HEADER OF REPORT ON MARKET STATISTICS	14
2.4	REPORT ON MARKET STATISTICS	15
2.5	TRAILER RECORD	17
3	BROADCAST	18
3.1	INTRODUCTION.....	18
3.2	COMPRESSION OF THE BROADCAST DATA	18
3.3	DECOMPRESSION ROUTINE:.....	18
3.3.1	Sequential Packing	18
3.3.2	Structure	19
3.3.3	Pseudocode.....	20
3.4	IMPLEMENTATION AT FRONT END	20
3.5	GENERAL MESSAGE BROADCAST.....	22
3.6	CHANGE IN SYSTEM STATUS/ PARAMETERS	23
3.7	SECURITY MASTER UPDATE	27
3.8	CHANGE IN INSTRUMENT MASTER.....	33
3.9	CHANGE PARTICIPANT STATUS	34
3.10	CHANGE OF SECURITY STATUS.....	35
3.11	CHANGE OF MARKET STATUS	36
3.12	TICKER AND MARKET INDEX.....	38
3.13	MARKET BY ORDER/MARKET BY PRICE UPDATE	39
3.14	ONLY MARKET BY PRICE UPDATE	44
3.15	MARKET WATCH UPDATE	48
3.16	SECURITY OPEN MESSAGE	49
3.17	BROADCAST CIRCUIT CHECK.....	50
3.18	3.16 MULTIPLE INDEX BROADCAST.....	50
3.19	INDUSTRY INDEX BROADCAST	52
3.20	SPREAD MARKET BY PRICE	53
3.21	UNDERLYING OPEN INTEREST.....	55
4	APPENDIX A	57
4.1	LIST OF TRANSACTION CODES:	57
4.2	MARKET TYPE.....	59
4.3	MARKET STATUS.....	59
4.4	BOOK TYPES.....	59
4.5	SECURITY STATUS	60

5	APPENDIX B.....	61
5.1	CONTRACT FILE STRUCTURE	61
5.2	PARTICIPANT FILE STRUCTURE	67
5.3	SECURITY FILE STRUCTURE	67

1 Chapter 1 General Guidelines

1.1 Introduction

This chapter describes general guidelines for the protocol to be used to interpret the broadcast information sent by the Trading System. The System operates on X25 as well as IP protocol.

1.2 Guidelines for Designers

1. All time fields are number of seconds from midnight January 1, 1980.
2. All price fields must be multiplied by 100 before sending to the host end and divided by 100 while receiving from the host end as the host system processes prices in paise.

1.3 Guidelines for Programmers

1. If your system uses little-endian order, the data types such as UINT, SHORT, LONG and DOUBLE contained in a packet, which occupy more than one byte should be twiddled (byte reversed). Twiddling involves reversing a given number of bytes such that the byte in 'n' position comes to the first position; the byte in (n-1) position comes to the second position and so on. For example, if the value to be sent is 1A2B (hexadecimal), reverse the bytes to 2B1A. The same applies while receiving messages. So if the value received is 02BC, the actual value is BC02. So twiddle such data types before sending and after receiving to ensure that correct data is sent and received.

Note:

Twiddling is required because of the variety in endian order—big and little. A big-endian representation has a multibyte integer written with its most significant byte on the left. A little-endian representation, on the other hand, places the most significant byte on the right. Intel's 80x86 processors and their clones are little

endian. Sun's SPARC, Motorola's 68K, and the PowerPC families are all big endian. All of the protocol layers in the TCP/IP suite are defined to be big endian. The trading system host end uses big-endian order. Suppose your machine uses little-endian order. Twiddle the numeric value before sending and after receiving over a TCP/IP connection.

2. All the structures should be defined in the following manner:
 - Items of type char or unsigned char, or arrays containing items of these types, are byte aligned.
 - Structures are word aligned; structures of odd size are padded to an even number of bytes.
 - All other types of structure members are word aligned.
3. All reserved fields mentioned should be mapped to CHAR buffer and initialized to NULL.
4. Inside the broadcast packet, the first byte indicates the market type. Ignore the next 7 bytes. If the first byte is 2 it indicates Futures & Options market. The message header starts from the 9th byte. The remaining portion of the buffer has to be mapped to the broadcast structures mentioned in the document.

Note:

- The values of all the transaction codes given in the document are listed in Appendix.

1.4 Message Structure Details

The message structure consists of two parts namely message header and message data. The message header consists of the fields of the header which is prefaced with all the structures.

The message data consists of the actual data that is sent across to the host or received from the host.

Transaction code, an important field of the message header, is a unique numeric identifier which is sent from the trading system.

1.5 Data Types Used

Data Type	Size in Bytes	Signed/ Unsigned
CHAR	1	Signed
UINT	2	Unsigned
SHORT	2	Signed
LONG	4	Signed
DOUBLE	8	Signed and Floating Point
BIT	1 bit	NA

1.6 Message Header

Each structure is prefaced with a MESSAGE_HEADER. Some data in the header are fixed whereas some data are variable and set differently for each transaction code. The structure of the MESSAGE_HEADER is as follows:

Structure Name: MESSAGE_HEADER	
Packet Length: 38 bytes	
	Reserved 2 Bytes
LONG	LogTime
CHAR	AlphaChar [2]
SHORT	TransactionCode
SHORT	ErrorCode
CHAR	Reserved [8]
CHAR	TimeStamp1 [8]
CHAR	TimeStamp2 [8]
SHORT	MessageLength

Field Name	Description	Comment
LogTime	This field should be set to zero while sending messages to the host. For messages coming from the host, this contains the time when the message was generated by the trading system host.	
AlphaChar	This field should be set to the first two characters of Symbol if the structure contains Symbol and Series. In other cases, it should be set to blank.	The Symbol field should contain the name of the security. The series field should contain xx.
TransactionCode	This field should contain the transaction message number. This describes the type of message sent or received.	
ErrorCode	This should be set to zero while sending messages to the host. For messages coming from the host, this describes the type of error.	
TimeStamp1	This field contains the time the message arrives at the trading system host. This should be set to numeric zero while sending to host.	In TimeStamp1, current time is sent in jiffies from host end. This is 8 bytes in host end. In front end, we typecast the first four bytes into double and store it in a variable and typecast the other four bytes into double and store in another variable. These values are used while requesting message area download.
TimeStamp2	This field should be set to numeric zero while sending to the host. For messages coming from the host, this field contains the number of the machine from which the packet is coming.	In TimeStamp2, machine number is sent from the host end. This is 8 bytes in host end and CHAR [8] in front end. In front end, if it is an interactive connection, machine number is stored in 7 th position and for broadcast connection

Field Name	Description	Comment
		machine number is stored in 0 th position.
MessageLength	This field is set to the length of the entire message, including the length of Message Header.	

1.7 Broadcast Process Header

The broadcast messages like market open, market close, market in pre-open are prefaced with BCAST_HEADER. Some fields in the header are fixed. The remaining fields are variable and set differently for each transaction code. The structure of the BCAST_HEADER is as follows:

Structure Name: BCAST_HEADER	
Packet Length: 46 bytes	
Reserved	2 bytes
LONG	LogTime
CHAR	AlphaChar [2]
SHORT	TransCode
SHORT	ErrorCode
LONG	BCSeqNo
Reserved	4 Bytes
CHAR	TimeStamp2 [8]
CHAR	Filler [8]
SHORT	MessageLength

Field Name	Description	Comment
LogTime	This field contains the time when the message was generated by the trading system host.	
AlphaChar	This field is set to the first two characters of Symbol if the structure contains Symbol and Series; otherwise it is set to blank. The normal market open and close broadcast messages were received by the Front End with 'TD' in the alpha char	

Field Name	Description	Comment
	field. The segment open and close messages will be broadcasted with 'S1', 'S2', 'S3' and 'S4' in the alpha char field for the 4 segments where S1= REGULAR SEGMENT S2 = EXTENDED SEGMENT S3 = EXTENDED1 S4 = EXTENDED2	
TransactionCode	This field contains the transaction message number. This describes the type of message received or sent.	
ErrorCode	This field contains the error number which describes the type of error.	
BCSeqNo	This field contains BCAST Sequence number for Ericcson switch.	
TimeStamp2	This field contains the time when message is sent from the host.	
Filler2	This field contains the machine number.	
MessageLength	This field is set to the length of the entire message, including the length of the message header.	

1.8 Error Message

When the Error Code in the MESSAGE_HEADER is not zero, the structure sent is ERROR RESPONSE. The Error Message will describe the error received. The structure is as follows:

Structure Name: MS_ERROR_RESPONSE
Packet Length: 180 bytes

MESSAGE_HEADER CHAR Key [14] CHAR ErrorMessage [128]
--

Field Name	Description	Comment
ErrorMessage	This field contains the error message. Refer to <i>List of Errors Codes</i> in Appendix.	
Key	This field contains the token number of the Contract.	

1.9 Structure Reference

1.9.1 Contract Descriptor structure

```

STRUCT CONTRACT_DESC
{
    CHAR Instrument Name[ 6 ]
    CHAR Symbol [ 10 ]
    LONG Expiry Date
    LONG Strike Price
    CHAR Option Type[ 2 ]
    SHORT CA Level;
}
    
```

2 Bhav Copy

2.1 Introduction

At the end of the day the bhav copy is broadcast. Firstly, a message is sent saying that the broadcast of the bhav copy will start now. Then the header is sent indicating the actual data will follow this packet. After the header data packet is sent. This follows the trailer record, marking the end of bhav copy.

2.2 Message Stating the Transmission of Bhav Copy Will Start Now

This is the first message which is broadcast saying the bhav copy will be started now. The structure sent is:

MS_BCAST_MESSAGE (Refer to *Broadcast*, section 3)

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_JRNL_VCT_MSG (6501).	

2.3 Header of Report on Market Statistics

A header precedes the actual bhav copy that is sent to the trader. The message structure sent is:

REPORT HEADER

Structure Name: MS_RP_HDR	
Packet Length: 104 bytes	
Transaction Code: RPRT_MARKET_STATS_OUT_RPT (1833)	
STRUCT	MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1)
CHAR	MessageType
LONG	ReportDate
SHORT	UserType
CHAR	BrokerId [5]
CHAR	FirmName [25]
SHORT	TraderNumber
CHAR	TraderName [26]

Field Name	Description	Comment
TransactionCode	The transaction code is RPRT_MARKET_STATS_OUT_RPT (1833).	
MessageType	This field is set to 'H' denoting Header.	
OrgScope	This field is reserved for future use.	
ReportDate	Set to the report date.	
UserType	This field specifies type of user. It is set to '-1'.	
BrokerId	This field specifies Trading Member ID. It is set to blank.	
BrokerName	This field specifies the name of the broker. It is set to blank.	
TraderNumber	This field specifies trader/user ID. It is set to zero.	
TraderName	This field specifies the name of the trader. It is set to blanks.	

2.4 Report on Market Statistics

This is the actual data that is sent for the report.

REPORT MARKET STATISTICS

Structure Name: MS_RP_MARKET_STATS	
Packet Length: 486 bytes	
Transaction Code: RPRT_MARKET_STATS_OUT_RPT (1833).	
STRUCT	MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1)
CHAR	MessageType
	Reserved 1 byte
SHORT	NumberOfRecords
STRUCT	MKT_STATS_DATA [6]
{	
STRUCT	CONTRACT_DESC (Refer to Section 1.4.1)
SHORT	MarketType
LONG	OpenPrice
LONG	HighPrice
LONG	LowPrice
LONG	ClosingPrice

```

LONG   TotalQuantityTraded
DOUBLE TotalValueTraded
LONG   PreviousClosePrice
LONG   OpenInterest
LONG   ChgOpenInterest
CHAR   Indicator [4]
}
    
```

Field Name	Description	Comment
TransactionCode	The transaction code is RPRT_MARKET_STATS_OUT_RPT (1833).	
MessageType	This field is set to 'R'.	
NumberOfRecords	This field contains the number of markets for which Market Statistics is being sent. In a packet maximum 6 records can be packed.	
Symbol	This field contains the Symbol of the security.	
Series	This field contains the series of a security.	
MarketType	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 	
OpenPrice	This field contains the open price of a security.	
HighPrice	This field the highest trade price.	
LowPrice	This field contains the lowest trade price.	
ClosingPrice	This field contains the closing price of a security.	
TotalQuantityTraded	This field contains the total quantity of the security that has been traded today.	
TotalValueTraded	This field contains the total value of the securities trade.	
PreviousClosePrice	This field contains the previous day's closing price.	
OpenInterest	This field contains the open interest value.	

Field Name	Description	Comment
ChgOpenInterest	This field contains the change in value of open interest.	

2.5 Trailer Record

This indicates that the transmission of bhav copy ends here. The structure is:

REPORT TRAILER

Structure Name: MS_RP_TRAILER
Packet Length: 42 bytes
Transaction Code: RPRT_MARKET_STATS_OUT_RPT (1833).
MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) CHAR MessageType LONG NumberOfPackets Reserved 1 byte

Field Name	Description	Comment
TransactionCode	The transaction code is: RPRT_MARKET_STATS_OUT_RPT (1833).	
MessageType	This is set to 'T' denoting trailer record.	
NumberOfRecords	This contains the number of data packets sent in the bhav copy.	

3 Broadcast

3.1 Introduction

This section describes the Compression and Decompression algorithm of Broadcast data and the various Broadcast messages with their structures.

3.2 Compression of the Broadcast Data

The broadcast traffic from the exchange, which gives the on-line quotes to the trading terminals, has been continually increasing, especially during market open and market close. To accommodate the increased broadcast traffic, the exchange has come up with a compression algorithm to compress some of the specific broadcast transaction codes, which are as follows

Transaction Code	Represents
7200	MBO/MBP
7201	Mkt Watch
7202	Ticker
7208	Only MBP

LZO compression algorithm is used to compress the above specified broadcast transaction codes. The details of the LZO compression algorithm is described below. The LZO stands for Lempel Ziv Oberhaumer. This algorithm is freely available on the internet (URL: <http://www.oberhumer.com/opensource/lzo>). It is made available by free software foundation. The algorithm is tested on various operating systems like UNIX and red hat Linux.

3.3 Decompression routine:

NSE will provide the object file containing the decompression routine.

3.3.1 Sequential Packing

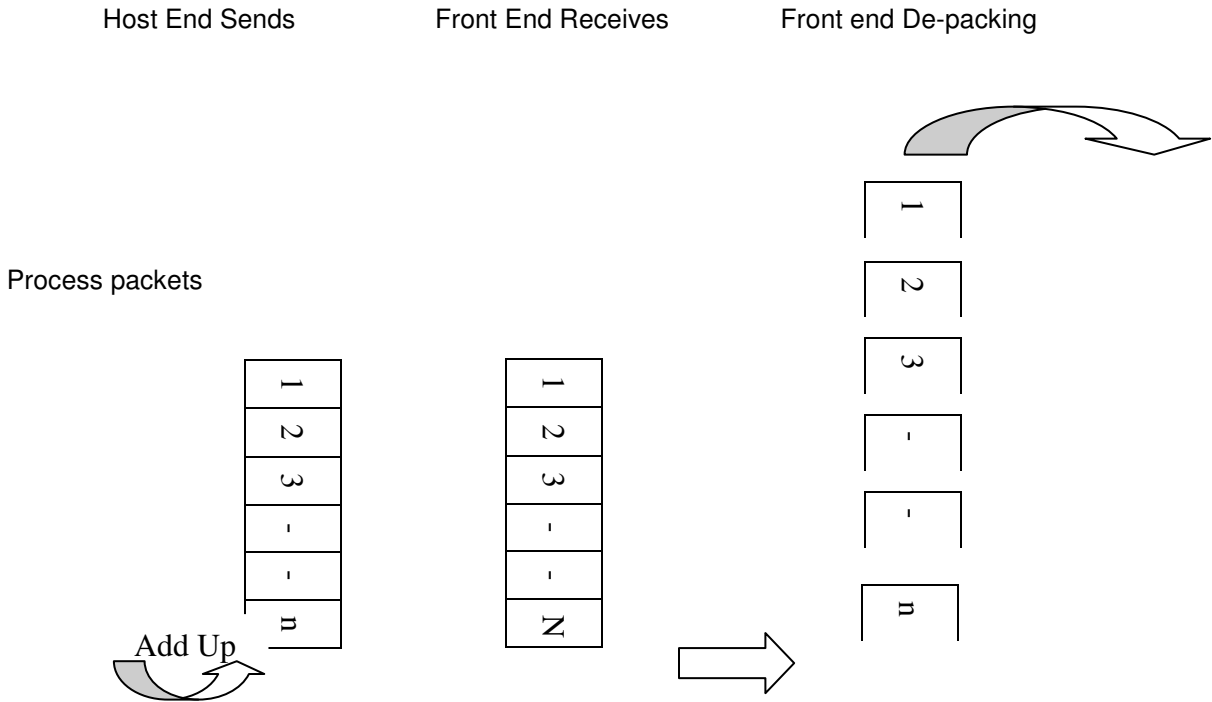
To improve the effective data transfer the idea of sequential packing along with the lzo compression algorithm has been incorporated. At the host end sequential packing algorithm packs the incoming data packets, which is then transmitted over the network. The data packets are packed in FIFO order.

.For example

If n packets are packed in a buffer they are arranged in the following order.

1st packet will be stored at the first place in the buffer, 2nd Packet will be stored at the second place, and so on..

At the front end while de packing the buffer, the packets are to be segregated in the same order i.e isolate each packet and process each packet as per the sequence viz- first packet first and last packet at the end. The packets within a buffer may be an admixture of compressed and uncompressed data packets.



3.3.2 Structure

Incoming packet at the front end can be interpreted by mapping onto the following structure.

```

Struct {
    CHAR  cNetId [2]
    SHORT iNoPackets
    CHAR  cPackData [534]
} BcastPackData
    
```

where,

- cNetId[2] Identifies the machine (CM broadcast or F&O Broadcast)
- iNoPackets The number of packets that are sequentially packed
- cPackData Buffer containing all the packets.

The buffer when mapped to, by the above structure, the number of packets in the buffer can be known. The next task is to segregate the packets and process the individual packets.

3.3.3 Pseudocode

```
struct {  
    SHORT iCompLen  
    CHAR  cCompData[MAX_MESSAGE_SIZE_X25]  
        }BcastCmpPacket
```

Note: The above structure is currently used to interpret the incoming packets. The iCompLen intimates us whether the packet is compressed or uncompressed. For the compressed packets (iCompLen > 0) pass the buffer to the decompression routine, else follow the uncompressed packet routing.

The packets received through the broadcast traffic have to be interpreted as follows

```
    COMPRESSION_BROADCAST_DATA  
    {  
        SHORT CompressionLen  
        CHAR BroadcastData [ ]  
    }
```

- The first two bytes of the broadcast packet indicate the length of the data after compression.
- If the compression length is zero, the data received is not compressed.
- If the length is non-zero, the data following the length should be decompressed
- By using the decompression routine. Inside the broadcast data, the first 8 bytes before the message header should be ignored. The message header starts from the 9th byte.

3.4 Implementation at Front End

The lzo directory (lzo1.07) contains all the lzo source, header and library files.

These files are to be included while building an application.

Sample Implementation using MS-Visual Studio VC++ 6.0:

Put lzo 1.07 folder in C drive.

Go to Microsoft Visual C++

decomp_outlen Specifies the output length of the decompressed buffer

Note:

Inside the broadcast data, the first byte indicates the market type. Ignore the rest of the 7 bytes before message header. If the first byte has the value of '2', it is futures and options market.

For more details regarding using the lzo functions please refer to the examples sub folder of the lzo 1.07 folder.

INSIDE THE BROADCAST DATA THE FIRST BYTE INDICATES THE MARKET TYPE. IGNORE THE REST OF THE 7 BYTES BEFORE MESSAGE HEADER. IF THE FIRST BYTE IS 2 IT IS FUTURES AND OPTIONS MARKET.

THE MESSAGE HEADER STARTS FROM 9TH BYTE

The remaining portion of the buffer has to be mapped as usual from the message header to the following structures as specified from section 3.2 in broadcast section.

3.5 General Message Broadcast

Any general message is broadcast in the following structure. The structure being sent is:

Structure Name: MS_BCAST_MESSAGE
Packet Length: 295 bytes
Transaction Code: BCAST_JRNL_VCT_MSG (6501)
STRUCT MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) SHORT BranchNumber CHAR BrokerNumber [5] CHAR ActionCode [3] STRUCT ST_BCAST_DESTINATION Reserved 26 byte Note: Use any one of following two ST_BCAST_DESTINATION structures: For Small Endian Machines STRUCT ST_BCAST_DESTINATION { Reserved : 4 BIT Journaling Required: 1 BIT Tandem : 1 BIT

```

        ControlWorkstation : 1 BIT
        Trader Workstation : 1 BIT
        Reserved           : 1 byte
    }

For Big Endian Machines

    STRUCT ST_BCAST_DESTINATION
    {
        Trader Workstation : 1 BIT
        ControlWorkstation : 1 BIT
        Tandem              : 1 BIT
        Journaling Required: 1 BIT
        Reserved            : 4 BIT
        Reserved            : 1 byte
    }

    SHORT BroadcastMessageLength
    CHAR  BroadcastMessage [239]

```

Field Name	Description	Comment
TransactionCode	The transaction code is: BCAST_JRNL_VCT_MSG (6501).	
BranchNumber	This field contains the branch number of the trader to which he belongs.	
BrokerNumber	This field contains the Trading Member ID of the broker.	
ActionCode	This field contains the action code which indicates the action taken.	For example, 'SYS' - system 'LIS' - Listing
Broadcast Destination	This field specifies the destination of the message, that is, Trader Workstation or Control Workstation.	
Broadcast MessageLength	This field contains the length of the broadcast message.	
BroadcastMessage	This field contains the broadcast message.	

3.6 Change in System Status/ Parameters

This message is sent when any global operating parameters are changed or status of markets is changed.

SYSTEM INFORMATION DATA

MS_SYSTEM_INFO_DATA

Structure Name: MS_SYSTEM_INFO_DATA
Packet Length: 104 bytes
Transaction Code: BCAST_SYSTEM_INFORMATION_OUT (7206).
<pre> STRUCT MESSAGE_HEADER (Refer to <i>Message Header</i> in Chapter 2) STRUCT ST_MARKET_STATUS { SHORT Normal SHORT Oddlot (Not used) SHORT Spot (Not used) SHORT Auction (Not used) } STRUCT ST_EX_MARKET_STATUS { SHORT Normal SHORT Oddlot (Not used) SHORT Spot (Not used) SHORT Auction (Not used) } STRUCT ST_PL_MARKET_STATUS { SHORT Normal SHORT Oddlot (Not used) SHORT Spot (Not used) SHORT Auction (Not used) } CHAR UpdatePortfolio LONG MarketIndex SHORT DefaultSettlementPeriod (Normal) SHORT DefaultSettlementPeriod (Spot) SHORT DefaultSettlementPeriod (Auction) SHORT CompetitorPeriod SHORT SolicitorPeriod SHORT WarningPercent SHORT VolumeFreezePercent SHORT SnapQuoteTime Reserved 2 byte LONG BoardLotQuantity LONG TickSize SHORT MaximumGtcDays Note: Use any one of following two structures: For Small Endian Machines: Struct ST_STOCK_ELIGIBLE_INDICATORS { Reserved : 5 BIT </pre>

```

        Books Merged   : 1 BIT
        Minimum Fill   : 1 BIT
        AON            : 1 BIT
        Reserved       : 1 byte
    }
For Big Endian Machines:
    Struct ST_STOCK_ELIGIBLE_INDICATORS
    {
        AON            : 1 BIT
        Minimum Fill   : 1 BIT
        Books Merged   : 1 BIT
        Reserved       : 5 BIT
        Reserved       : 1 byte
    }

    SHORT   DisclosedQuantityPercentAllowed
    LONG    RiskFreeInterestRate
    
```

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_SYSTEM_INFORMATION_OUT (7206).	
MarketStatus	This field contains the following values: <ul style="list-style-type: none"> • '0' if it is Preopen (for Normal market only) • '1' if it is Open • '2' if it is Closed • '3' if it is Preopen Closed • '4' if it is Postclose 	In the pre-open state of the market, orders can only be entered but no matching takes place. The trading starts when the market is open. No orders can be entered for a security when the market is closed.
UpdatePortfolio	This field contains: <ul style="list-style-type: none"> • 'N' if there is no change in portfolio. • 'Y' if there is any change in portfolio after Last Update Portfolio Time in the request. 	You have to update your LDB portfolio file by sending EXCH_PORTF_IN (1775) request.
MarketIndex	This field contains the current market index.	
SettlementPeriod	The default settlement period in various	

Field Name	Description	Comment
	markets is sent in the fields Default Settlement (Normal), Default Settlement (Spot) and Default Settlement (Auction).	
CompetitorPeriod	This field contains the default competitor period for auction.	
SolicitorPeriod	This field contains the default solicitor period for auction.	
WarningPercent	This field contains the warning percentage. (Refer to <i>Turnover Limit Exceeded or Broker Reactivated</i> in Chapter 10)	If a broker exceeds his turnover by this value in percent, then a warning message is broadcast to all traders.
VolumeFreezePercent	This field contains the volume freeze percent. (Refer to <i>Turnover Limit Exceeded or Broker Reactivated</i> in Chapter 10)	If a broker exceeds his turnover by this value in percent, the broker is deactivated and a message is broadcast to all traders.
SnapQuoteTime	This field contains the snap quote time. Currently, it is 60 seconds.	
BoardLotQuantity	This field contains the board lot quantity. The regular lot order quantity must be a multiple of this quantity.	
TickSize	This field contains the tick size. The order price, and the trigger price - if applicable, must be a multiple of this tick size.	
MaximumGtcDays	This field contains the maximum number of days after which a Good Till Canceled order will be canceled. Currently this field contains zero.	
SecurityEligibilityIndicator	This field contains the MF or AON flag set. If the MF flag is set, orders have the Minimum Fill attribute set. If the AON flag is set orders have the AON attribute set.	
DisclosedQuantityPercentAllowed	This field contains the disclosed quantity percentage allowed. The disclosed quantity if set may not be greater than this percent of the total quantity.	
RiskFreeInterestRate	This field contains the risk free interest rate.	

3.7 Security Master Update

This is sent whenever the parameter of any security is changed. The structure is as follows:

SECURITY UPDATE INFORMATION

Structure Name: MS_SECURITY_UPDATE_INFO
Packet Length: 296 bytes
Transaction Code: BCAST_SECURITY_MSTR_CHG (7305)
<pre> STRUCT MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) LONG Token STRUCT SEC_INFO { CHAR InstrumentName [6] CHAR Symbol [10] CHAR Series [2] LONG ExpiryDate LONG StrikePrice CHAR OptionType [2] SHORT CALevel } SHORT PermittedToTrade DOUBLE IssuedCapital LONG WarningQuantity LONG FreezeQuantity CHAR CreditRating [12] Note: Use any one of following two ST_SEC_ELIGIBILITY_ PER_ MARKET structures: For Small Endian Machines: STRUCT ST_SEC_ELIGIBILITY_ PER_ MARKET [4] { Reserved : 7 BIT Eligibility : 1 BIT SHORT Status } For Big Endian Machines: STRUCT ST_SEC_ELIGIBILITY_ PER_ MARKET [4] { Eligibility : 1 BIT Reserved : 7 BIT SHORT Status } </pre>

```

SHORT  IssueRate
LONG   IssueStartDate
LONG   InterestPaymentDate
LONG   IssueMaturityDate
LONG   MarginPercentage
LONG   MinimumLotQuantity
LONG   BoardLotQuantity
LONG   TickSize
CHAR   Name [25]
Reserved 1 byte
LONG   ListingDate
LONG   ExpulsionDate
LONG   ReAdmissionDate
LONG   RecordDate
LONG   LowPriceRange
LONG   HighPriceRange
LONG   ExpiryDate
LONG   NoDeliveryStartDate
LONG   NoDeliveryEndDate
    
```

Note: Use any one of following two ST_ELIGIBILITY_INDICATORS structures:

For Small Endian Machines:

```

STRUCT ST_ELIGIBILITY_INDICATORS
{
    Reserved      :      5 BIT
    Minimum Fill  :      1 BIT
    AON           :      1 BIT
    Participate In Market Index: 1 BIT
    Reserved      :      1 byte
}
    
```

For Big Endian Machines:

```

STRUCT ST_ELIGIBILITY_INDICATORS
{
    Participate In Market Index: 1 BIT
    AON           : 1 BIT
    Minimum Fill  : 1 BIT
    Reserved      : 5 BIT
    Reserved      : 1 byte
}
    
```

```

LONG   BookClosureStartDate
LONG   BookClosureEndDate
LONG   ExerciseStartDate
LONG   ExerciseEndDate
LONG   OldToken
CHAR   AssetInstrument [ 6 ]
    
```

```

CHAR    AssetName [ 10 ]
LONG    AssetToken
LONG    IntrinsicValue
LONG    ExtrinsicValue

Note: Use any one of following two ST_ELIGIBILITY_
INDICATORS structures:
For Small Endian Machines:
STRUCT  ST_PURPOSE
{
    Exercise Style : 1 BIT
    Reserved      : 1 BIT
    EGM           : 1 BIT
    AGM           : 1 BIT
    Interest      : 1 BIT
    Bonus         : 1 BIT
    Rights        : 1 BIT
    Dividend      : 1 BIT
    Reserved      : 3 BIT
    Is Corporate Adjusted: 1 BIT
    Is This Asset : 1 BIT
    PI Allowed    : 1 BIT
    Ex Rejection Allowed: 1 BIT
    Ex Allowed    : 1 BIT
}

For Big Endian Machines:
STRUCT  ST_PURPOSE
{
    Dividend      : 1 BIT
    Rights        : 1 BIT
    Bonus         : 1 BIT
    Interest      : 1 BIT
    AGM           : 1 BIT
    EGM           : 1 BIT
    Reserved      : 1 BIT
    Exercise Style : 1 BIT
    Ex Allowed    : 1 BIT
    Ex Rejection Allowed: 1 BIT
    PI Allowed    : 1 BIT
    Is This Asset : 1 BIT
    Is Corporate Adjusted: 1 BIT
    Reserved      : 3 BIT
}

LONG    LocalUpdateDateTime
CHAR    DeleteFlag
CHAR    Remark [25]
LONG    BasePrice;

```

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_SECURITY_MSTR_CHG (7305).	
Token	This field contains the token number of the security being updated. This is unique for a particular symbol-series combination.	
SecurityInformation	This contains the Symbol and Series (EQ / IL / TT) of the security.	
PermittedToTrade	This field contains one of the following values. <ul style="list-style-type: none"> • '0' - Listed but not permitted to trade. • '1' - Permitted to trade. 	
IssuedCapital	This field contains the issue size of the security.	
WarningQuantity	This field contains the warning quantity.	
FreezeQuantity	This field contains the freeze quantity.	
CreditRating	This field contains the credit rating of the security.	
Eligibility	The flag is set to '1' if the security is allowed to trade in a particular market.	
Status	This field contains one of the following values. <ul style="list-style-type: none"> • '1' - Pre-open (Only for Normal market) • '2' - Open • '3' - Suspended • '4' - Pre-open extended • '5' - Stock Open With Market 	
IssueRate	This field contains the price of the issue.	

Field Name	Description	Comment
IssueStartDate	This field contains the date of issue of the security.	
InterestPaymentDate	This field contains the interest payment date of the issue.	
IssueMaturityDate	This field contains the maturity date.	
MarginPercent	This field contains the initial margin percent to be collected on a contract.	
MinimumLotQuantity	This field contains the minimum lot of the order which can be placed.	
BoardLotQuantity	This field contains the Regular lot size.	
TickSize	This field contains the Tick size/ Min spread size.	
Name	This field contains the security name.	
ListingDate	This field contains the date of listing.	
ExpulsionDate	This field contains the date of expulsion.	
ReAdmissionDate	This field contains the date of readmission.	
RecordDate	This field contains the date of record changed.	
LowPriceRange	This field contains the lower price limit of operating ranges.	
HighPriceRange	This field contains the upper price limit of operating ranges.	
ExpiryDate	This field contains the last date of trading before any corporate action.	
NoDeliveryStartDate	This field contains the date from when physical delivery of share certificates is stopped for book closure.	
NoDeliveryEndDate	This field contains the date from when physical delivery of share certificates starts after book closure.	
MinimumFill	If this flag is set, the Minimum Fill attribute is allowed in orders in	

Field Name	Description	Comment
	this security.	
AON	If this flag is set, the AON attribute is allowed in orders in this security.	
Participat InMarket Index	This flag is set if this security participates in the market index.	
BookClosureStartDate	This field contains the date when the record books in the company for shareholder names starts.	
BookClosureEnd Date	This field contains the date when the record books in the company for shareholder names ends.	
ExerciseStartDate	This field contains the starting date for Exercise.	
ExerciseEndDate	This field contains the last date for Exercise.	
OldToken	This field is not used.	
AssetInstrument	This field contains the underlying asset type, for example INDEX.	
AssetName	This field contains the name of the underlying asset, for example NIFTY.	
AssetToken	This field contains the token number of the asset.	
IntrinsicValue	This field contains the intrinsic value of the contract.	
ExtrinsicValue	This field contains the extrinsic value of the contract.	
Purpose	This field contains the EX STYLE / EGM / AGM / Interest / Bonus / Rights / Dividend flags set depending on the corporate action.	
LocalUpdateDateTime	This field contains the local database update date-time.	
DeleteFlag	This contains one of the following values to denote whether the security is deleted or not. <ul style="list-style-type: none"> • 'N' – Active • 'Y' – Deleted 	
Remark	This field contains the remarks.	
BasePrice	This field contains the base price	

Field Name	Description	Comment
	of the stock.	

3.8 Change in Instrument Master

If a user is already logged in and if there is any change in the data then it is broadcast.

The structure received is as follows:

Structure Name: MS_INSTRUMENT_UPDATE_INFO
Packet Length: 76 bytes
Transaction Code: BCAST_INST_MSTR_CHG (7324)
<pre> struct MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) short InstrumentId CHAR InstrumentName [6] CHAR InstrumentDescription [25] LONG InstrumentUpdateDateTime CHAR DeleteFlag </pre>

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_INST_MSTR_CHG (7324).	
InstrumentId	This field contains the ID of the instrument.	
InstrumentName	This field contains the type of the instrument.	For example, OPTIDX, OPTSTK,FUTIDX etc.
InstrumentDescription	This field contains the full name of the instrument.	For example, for Instrument Name OPTIDX, it will be OPTIONS ON INDEX.
InstrumentUpdateTime	This field contains the time when this record has been modified.	
DeleteFlag	This field contains one of the following values to denote whether the instrument is deleted or not. <ul style="list-style-type: none"> • 'Y' for deleted • 'N' for not deleted (active) 	

3.9 Change Participant Status

This message is sent whenever there is any participant change. The structure sent is:

Structure Name: PARTICIPANT_UPDATE_INFO	
Packet Length: 81 bytes	
Transaction Code: BCAST_PART_MSTR_CHG (7306)	
STRUCT	MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1)
CHAR	Participant Id [12]
CHAR	ParticipantName [25]
CHAR	ParticipantStatus
LONG	ParticipantUpdateDateTime
CHAR	DeleteFlag

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_PART_MSTR_CHG (7306).	
ParticipantId	This field contains the participant ID.	
ParticipantName	This field contains the name of the participant which has been changed.	
ParticipantStatus	This field contains one of the following values to denote the status of the participant which has been changed: <ul style="list-style-type: none"> • 'S' – Suspended • 'A' – Active 	
ParticipantUpdateDateTime	This field contains the time when the participant information was changed. It is in number of seconds from January 1, 1980	
DeleteFlag	This field contains one of the following values to indicate whether the participant is deleted or not: <ul style="list-style-type: none"> • 'Y' for 'deleted' 	

Field Name	Description	Comment
	<ul style="list-style-type: none"> • 'N' for 'not deleted' 	

3.10 Change of Security Status

This message is sent whenever the status of any security changes. The structure sent is:

SECURITY STATUS UPDATE INFORMATION

Structure Name: MS_SECURITY_STATUS_UPDATE_INFO	
Packet Length: 460 bytes	
Transaction Code: BCAST_STOCK_STATUS_CHG (7320) and BCAST_STOCK_STATUS_CHG_PREOPEN (7210)	
STRUCT	MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1)
SHORT	NumberOfRecords
STRUCT	TOKEN AND ELIGIBILITY [35]
	{
	LONG Token
	ST_SEC_STATUS_PER_MARKET [4]
	{
	SHORT Status
	}
	}

Field Name	Description	Comment
TransactionCode	The transaction codes are: BCAST_STOCK_STATUS_CHG (7320) and BCAST_STOCK_STATUS_CHG_PREOPEN (7210).	
NumberOfRecords	This field contains the number of times the structure TOKEN AND ELIGIBILITY is repeated.	
Token	This field contains the token number of the security which has been changed.	
Status	This field contains the new status of the security. This can take any of the following values: <ul style="list-style-type: none"> • '1' - Pre-open 	

Field Name	Description	Comment
	<ul style="list-style-type: none"> • '2' - Open • '3' - Suspended • '4' - Pre-open extended 	

3.11 Change of Market Status

Sequence of the Market open messages:

Following message codes will be sent as a part of regular (first) market opening

- BC_OPEN_MSG (6511). This is sent when the market is opened.

Following message codes will still be sent, in case of Market opening for the second time during the day e.g. during sun outage, circuit hit

- BC_PRE_OR_POST_DAY_MSG (6531). This is sent when the market is reopened.
- BC_PRE_OPEN_ENDED (6571). This is sent when the pre-open period ends.
- BC_OPEN_MSG (6511). This is sent when the market is opened.

Whenever the status of the market changes, the following structure is sent:

BCAST_VCT_MESSAGES

Structure Name: STRUCTMS_BCAST_VCT_MSGS
Packet Length: 318 bytes
Transaction Code: Refer to the table given below.
<pre> STRUCT BCAST_HEADER (Refer to <i>BCAST Header</i> in Section 1) LONG Token STRUCT SEC_INFO { CHAR InstrumentName[6] CHAR Symbol [10] CHAR Series [2] LONG ExpiryDate LONG StrikePrice CHAR OptionType[2] SHORT CA Level } SHORT MarketType </pre> <p>Note: Use any one of following two ST_BCAST_DESTINATION structures:</p>

```

For Big Endian Machines:
STRUCT ST_BCAST_DESTINATION
{
    Reserved           : 4 BIT
    Journaling Required : 1 BIT
    Tandem             : 1 BIT
    Control Workstation : 1 BIT
    Trader Workstation  : 1 BIT
    Reserved           : 1 byte
}

For Big Endian Machines:
STRUCT ST_BCAST_DESTINATION
{
    Trader Workstation : 1 BIT
    ControlWorkstation : 1 BIT
    Tandem             : 1 BIT
    Journaling Required: 1 BIT
    Reserved           : 4 BIT
    Reserved           : 1 byte
}

SHORT BroadcastMessageLength
CHAR BroadcastMessage [239]
    
```

Field Name	Description	Comment
TransactionCode	<ul style="list-style-type: none"> BC_OPEN_MSG (6511). This is sent when the market is opened. BC_CLOSE_MSG (6521). This is sent when the market is closed. BC_PRE_OR_POST_DAY_MSG (6531). This is sent when the market is preopened. BC_PRE_OPEN_ENDED (6571). This is sent when the pre-open period ends. EQUAL BC_POSTCLOSE_MSG (6522). This is sent when the Market is in Postclose session. 	
SecurityInformation	This field contains the symbol and series of a security.	
MarketType	This field contains the value to indicate the type of market. <ul style="list-style-type: none"> '1' for Normal '2' for Odd Lot '3' for Spot 	

Field Name	Description	Comment
	<ul style="list-style-type: none"> '4' for Auction 	
BroadcastDestination	This field, if set to '1', specifies that the message is for the TWS.	
BroadcastMessage Length	This field contains the length of the broadcast message.	
BroadcastMessage	This field contains the contents of the broadcast message.	

3.12 Ticker and Market Index

Ticker and market index information is sent in the following structure:

Structure Name: MS_TICKER_TRADE_DATA
Packet Length: 482 bytes
Transaction Code: BCAST_TICKER_AND_MKT_INDEX (7202)
<pre> MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) SHORT Number of Records STRUCT ST_TICKER_INDEX_INFO [17] { LONG Token SHORT MarketType LONG FillPrice LONG FillVolume LONG OpenInterest LONG DayHiOI LONG DayLoOI } </pre>

Field Name	Description	Comment
TransactionCode	The transaction code sent is BCAST_TICKER_AND_MKT_INDEX (7202).	
NumberOfRecords	This field contains the number of times (maximum 17) the structure TICKER INDEX INFORMATION is repeated.	
Token	This field contains the token number which is a unique number given to a particular symbol-series	

Field Name	Description	Comment
	combination.	
MarketType	This field contains the type of market.	
FillPrice	This field contains the price at which the order has been traded.	
FillVolume	This field contains the quantity of security traded.	
Openinterest	This field contains the value of open interest.	
DayHiOi	This field contains the feed of highest open interest value of the day.	
DayLoOi	This field contains the feed of lowest open interest value of the day.	

3.13 Market by Order/Market by Price Update

The information regarding the best buy orders and the best sell orders is given in the following format.

BROADCAST MBO MBP

Structure Name: MS_BCAST_MBO_MBP
Packet Length: 388 bytes
Transaction Code: BCAST_MBO_MBP_UPDATE (7200)
<pre> MESSAGE_ HEADER (Refer to Message Header Section in Chapter 1) STRUCT ST_INTERACTIVE_MBO_DATA { LONG Token SHORT BookType SHORT TradingStatus LONG VolumeTradedToday LONG LastTradedPrice CHAR NetChangeIndicator LONG NetPriceChangeFromClosingPrice LONG LastTradeQuantity LONG LastTradeTime LONG AverageTradePrice SHORT AuctionNumber SHORT AuctionStatus SHORT InitiatorType LONG InitiatorPrice </pre>

```

LONG InitiatorQuantity
LONG AuctionPrice
LONG AuctionQuantity
CHAR RecordBuffer [sizeof (ST_MBO_INFO) * 10]
{
    SHORT TraderId
    LONG Qty
    LONG Price

    Note: Use any one of following two
    ST_MBO_MBP_TERMS structures

    For Small Endian Machines:
    STRUCT ST_MBO_MBP_TERMS
    {
        Reserved : 6 BIT
        AON      : 1 BIT
        MF       : 1 BIT
        Reserved : 1 byte
    }

    For Endian Machines:
    STRUCT ST_MBO_MBP_TERMS
    {
        MF       : 1 BIT
        AON      : 1 BIT
        Reserved : 6 BIT
        Reserved : 1 byte
    }

    LONG Min Fill Qty
}
}
CHAR Record Buffer [sizeof (ST_MBP_INFO) * 10]
{
    LONG Qty
    LONG Price
    SHORT NoOfOrders
}
DOUBLE Total Buy Quantity
DOUBLE Total Sell Quantity

Note: Use any one of following two ST_MBO_MBP_TERMS structures:

For Small Endian Machines:
STRUCT ST_INDICATOR
{
    Reserved : 4 BIT

```

```

        Sell          : 1 BIT
        Buy           : 1 BIT
        Last Trade Less : 1 BIT
        Last Trade More : 1 BIT
        Reserved      : 1 byte
    }

For Big Endian Machines:
    STRUCT ST_INDICATOR
    {
        Last Trade More : 1 BIT
        Last Trade Less : 1 BIT
        Buy              : 1 BIT
        Sell             : 1 BIT
        Reserved         : 4 BIT
        Reserved         : 1 byte
    }

    LONG   ClosingPrice
    LONG   OpenPrice
    LONG   HighPrice
    LONG   LowPrice
}

//END OF MS_BCAST_MBO_MBP

```

Field Name	Description	Comment
TransactionCode	The transaction code set for the purpose is BCAST_MBO_MBP_UPDATE (7200).	
Token	This field contains the token number which is a unique number given to a particular symbol-series combination.	
BookType	This field contains the book type—RL / ST / OL/ SP / AU Book Type Market '1' RL '2' ST '5' OL '6' SP '7' AU	Process the message only if book type is '1' or '2'. In other cases, skip it.
TradingStatus	This field contains the trading status of the security.	

Field Name	Description	Comment
	<ul style="list-style-type: none"> • '1' – Preopen • '2' – Open • '3' – Suspended • '4' – Preopen Extended 	
VolumeTradedToday	This field contains the total quantity of a security traded on the current day.	
LastTradedPrice	This field contains the price at which the latest trade in a security has taken place.	
NetChangeIndicator	<p>This is a flag which indicates any change of the order price from the LTP.</p> <ul style="list-style-type: none"> • '+' for increase • '-' for decrease 	
NetPriceChangeFromtheClosingPrice	<p>This field contains the net change between the closing price and the LTP. Presently it contains the closing price same as that of the Closing Price field mentioned subsequently. Since in this MBO/MBP packet both LTP and closing price is being sent it is for the front end to calculate the value of Net Price Change from the Closing Price by the formula $((\text{closing price} - \text{LTP}) / \text{closing price}) * 100$.</p>	
LastTradeQuantity	This field contains the quantity at which the last trade took place in a security.	
LastTradeTime	This field contains the time when the last trade took place in a security.	
AverageTradePrice	This field contains the average price of all the trades in a security.	
AuctionNumber	This field contains the auction number. The maximum value this can take is 9999. Other	

Field Name	Description	Comment
	than auction it is set to zero.	
AuctionStatus	Refer to <i>Appendix</i> .	
InitiatorType	This field contains the initiator type—control or trader. Presently initiator type is control, since only the Exchange can initiate an Auction. Otherwise it is set to blank.	
InitiatorPrice	This field contains the price of the security of the initiator's auction order. Otherwise it is set to zero.	
InitiatorQuantity	This field contains the quantity of the security of the initiator's auction order. Otherwise it is set to zero.	
AuctionPrice	This field contains the price at which auction in a security takes place. Otherwise it is set to zero.	
AuctionQuantity	This field contains the quantity at which auction in a security takes place. Otherwise it is set to zero.	
RecordBuffer (MBO INFORMATION)	This field contains the five best Buy orders and five best Sell orders from the order book.	
RecordBuffer (MBP INFORMATION)	This field contains the five best Buy prices and five best Sell prices from the order book.	
TotalBuyQuantity	This field contains the total quantity of buy orders in a security.	
TotalSellQuantity	This field contains the total quantity of sell orders in a security.	
Indicator	This field contains flags which are set to indicate Buy, Sell and Latest trade less than or greater than the immediately	

Field Name	Description	Comment
	previous LTP.	
ClosingPrice	This field contains the closing price of a security.	
OpenPrice	This field contains the open price of a security.	
HighPrice	This field contains the highest trade price.	
LowPrice	This field contains the lowest trade price.	

3.14 Only Market by Price Update

The information regarding the best buy orders and the best sell orders is given in the following format:

BROADCAST ONLY MBP

Structure Name: MS_BCAST_ONLY_MBP
Packet Length: 468 bytes
Transaction Code: BCAST_ONLY_MBP (7208)
<pre> MESSAGE_HEADER (Refer to Message Header in Section 1) SHORT NoOfRecords INTERACTIVE ONLY MBP DATA [2] { LONG Token SHORT BookType SHORT TradingStatus LONG VolumeTradedToday LONG LastTradedPrice CHAR NetChangeIndicator LONG NetPriceChangeFromClosingPrice LONG LastTradeQuantity LONG LastTradeTime LONG AverageTradePrice SHORT AuctionNumber SHORT AuctionStatus SHORT InitiatorType LONG InitiatorPrice LONG InitiatorQuantity LONG AuctionPrice LONG AuctionQuantity CHAR RecordBuffer [sizeof (MBP_INFORMATION) * 10] SHORT BbTotalBuyFlag SHORT BbTotalSellFlag </pre>

```

DOUBLE TotalBuyQuantity
DOUBLE TotalSellQuantity

Note: Use any one of following two MBP_INDICATOR structures:

For Small Endian Machines:
STRUCT ST_INDICATOR
{
    Reserved      : 4 BIT
    Sell          : 1 BIT
    Buy           : 1 BIT
    Last Trade Less : 1 BIT
    Last Trade More : 1 BIT
    Reserved      : 1 byte
}

For Big Endian Machines:
STRUCT ST_INDICATOR
{
    Last Trade More : 1 BIT
    Last Trade Less : 1 BIT
    Buy             : 1 BIT
    Sell            : 1 bit
    Reserved        : 4 BIT
    Reserved        : 1 byte
}

LONG ClosingPrice
LONG OpenPrice
LONG HighPrice
LONG LowPrice
}
} End of MS_BCAST_ONLY_MBP
    
```

Structure Name: MBP INFORMATION
LONG Quantity LONG Price SHORT NumberOfOrders SHORT BbBuySellFlag

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_ONLY_MBP (7208).	
NoOfRecords	This field contains the number of securities sent.	

Field Name	Description	Comment
Token	This field contains the token number which is a unique number given to a particular symbol-series combination.	
BookType	This field contains indicates the book type—RL / ST / SL / NT / OL/ SP Refer to <i>Book Types</i> in Appendix	
TradingStatus	This field contains the trading status of the security. It can be one of the following: <ul style="list-style-type: none"> • '1' – Preopen • '2' – Open • '3' – Suspended • '4' – Preopen Extended 	
VolumeTradedToday	This field contains the total quantity of a security traded on the current day.	
LastTradedPrice	This field contains the price at which the latest trade in a security has taken place.	
NetChangeIndicator	This is a flag which indicates any change of the order price from the LTP: <ul style="list-style-type: none"> • '+' for increase • '-' for decrease 	
NetPriceChange	This field contains the net change between the closing price and the LTP. Presently it contains the closing price same as that of the Closing Price field mentioned subsequently. Since in this MBP packet both LTP and closing price are being sent it is for the front end to calculate the value of Net Price Change from the Closing Price by the formula $((\text{closing price} - \text{LTP})/\text{closing price}) * 100$.	
LastTradeQuantity	This field contains the quantity at which the last trade took place in a security.	
LastTradeTime	This field contains the time when the last trade took place in a security.	
AverageTradePrice	This field contains the average price of all the trades in a security.	
AuctionNumber	This field contains the auction number.	

Field Name	Description	Comment
	Currently it is not in use.	
AuctionStatus	Refer to <i>Appendix</i> .	
InitiatorType	This field contains the initiator type—control or trader. Presently initiator type is control, since only the Exchange can initiate an auction. Otherwise it is set to blank.	
InitiatorPrice	This field contains the price of the security of the initiator's auction order. Otherwise it is set to zero.	
InitiatorQuantity	This field contains the quantity of the security of the initiator's auction order. Otherwise it is set to zero.	
AuctionPrice	This field contains the price at which auction in a security takes place. Otherwise it is set to zero.	
AuctionQuantity	This field contains the quantity at which auction in a security takes place. Otherwise it is set to zero.	
RecordBuffer (MBP INFORMATION)	This field contains the five best Buy prices and five best Sell prices from the order book.	
BbTotalbuyFlag	This field, currently, contains a value of zero, since buy back concept is not implemented.	
BbTotalsell Flag	This field, currently, contains a value of zero, since buy back concept is not implemented.	
TotalBuyQuantity	This field contains the total quantity of buy orders in a security.	
TotalSellQuantity	This field contains the total quantity of sell orders in a security.	
Indicator	This field contains flags which are set to indicate Buy, Sell and Latest trade less than or greater than the immediately previous LTP.	
ClosingPrice	This field contains the closing price of a security.	
OpenPrice	This field contains the open price of a security.	
HighPrice	This field contains the highest trade	

Field Name	Description	Comment
	price.	
LowPrice	This field contains the lowest trade price.	
MBPInformation	This field contains the quantity, price and number of orders for a maximum of five best prices.	

3.15 Market Watch Update

The market watch information gives the best buy order and its quantity, best sell order and its quantity and the last trade price. The structure sent for the purpose is:

Structure Name: MS_BCAST_INQ_RESP_2
Packet Length: 600 bytes
Transaction Code: BCAST_MW_ROUND_ROBIN (7201)
<pre> STRUCT MESSAGE_HEADER (Refer to <i>Message Header</i> in Section 1) SHORT Number of Records STRUCT ST_MARKET_WATCH_BCAST [5] { LONG Token STRUCT ST_MKT_WISE_INFO [3] { STRUCT ST_INDICATOR LONG BuyVolume LONG BuyPrice LONG SellVolume LONG SellPrice LONG LastTradePrice LONG LastTradeTime } LONG OpenInterest } </pre>

Field Name	Description	Comment
TransactionCode	The transaction code sent is BCAST_MW_ROUND_ROBIN (7201).	
NumberofRecords	This field contains the number of times the structure MARKET WATCH BROADCAST is repeated.	

Field Name	Description	Comment
Token	This field contains the token number which is a unique number given to a particular symbol-series combination.	
Indicator	This field contains flags which are to indicate Buy, Sell and Last trade less than or greater than previous LTP.	
BuyVolume	This field contains the quantity of the best Buy order.	
BuyPrice	This field contains the price of the best Buy order.	
SellVolume	This field contains the quantity of the best Sell order.	
SellPrice	This field contains the price of the best Sell order.	
LastTradePrice	This field contains the latest trade price of a security.	
LastTradeTime	This field contains the latest trade time of a security.	
OpenInterest	This field contains the feed of Open Interest.	

3.16 Security Open Message

When the market opens the open price of the security is sent in the following structure:

Structure Name: MS_SEC_OPEN_MSGS
Packet Size : 62 bytes
Transaction Code: SECURITY_OPEN_PRICE (6013).
STRUCT MESSAGE_HEADER (Refer to <i>Message Header</i> in Chapter 1) CHAR Symbol [10] CHAR Series [2] LONG Token LONG OpeningPrice Reserved 4 BIT

Field Name	Description	Comment
TransactionCode	The transaction code is SECURITY_OPEN_PRICE (6013).	

Security Information	This field contains the symbol and series for a particular security.	
Token	This field contains the token number which is a unique number given to a particular symbol-series combination.	
OpeningPrice	This field contains the open price of the security.	

3.17 Broadcast Circuit Check

If there has been no data on the broadcast circuit for a stipulated time period then a pulse is sent. This time now is 9 sec but it can be changed by the NSE control. This is just to intimate that the circuit is still there but there is no data to send. The structure sent is:

MESSAGE_HEADER (Refer to *Message Header* in Chapter 1)

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_CIRCUIT_MSG (6541).	

3.183.16 Multiple Index Broadcast

This is a multiple index broadcast. It will be coming through Cash broadcast circuit. It sends the broadcast structure as follows:

Structure Name: MS_BCAST_INDICES	
Packet Length: 440 bytes	
Transaction Code: BCAST_INDICES (7207)	
STRUCT	MESSAGE_HEADER (Refer to <i>Message Header</i> in Chapter 1)
SHORT	NumberOfRecords
STRUCT	MS_INDICES [15]
{	
	CHAR IndexName [21]
	LONG IndexValue
	LONG HighIndexValue
	LONG LowIndexValue
	LONG OpeningIndex
	LONG ClosingIndex
	LONG PercentChange
	LONG YearlyHigh

```

LONG   YearlyLow
LONG   NoOfUpmoves
LONG   NoOfDownmoves
DOUBLE Market Capitalisation
CHAR   NetChangeIndicator
Reserved 1 byte
}
    
```

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_INDICES (7207).	
NoofRecords	This field contains the number of indices currently supported by the system. Depending upon this number there will be records filled up in subsequent INDICES structure	
Indices	This is an array of structure. Number of records field shows how many records this structure will contain. The attributes of the structure are described subsequently.	
IndexName	This field contains the name of the index.	For example, Defty, Nifty
IndexValue	This field contains on line market index value at that instance of broadcast.	
HighIndexValue	This field contains the day's highest index value.	
LowIndexValue	This field contains the day's lowest index value.	
OpeningIndex	This field contains the opening index value when market opens.	
ClosingIndex	This field, if market is open, contains the previous day's closing index. After day's batch processing is over this field contains today's close.	
PercentChange	This field contains percentage change in current index with respect to yesterday's closing index.	
YearlyHigh	This field contains the highest index in the year.	
YearlyLow	This field contains the lowest index in the year.	
Noofupmoves	This field contains the number of time	

Field Name	Description	Comment
	index has moved up with respect to previous index.	
Noofdownmoves	This field contains the number of time index has moved down with respect to previous index.	
MarketCapitalization	This field contains the Market Capitalization of securities participating in that index.	
NetChangeIndicator	This field contains one of the following values. <ul style="list-style-type: none"> • '+' – if the current index is greater than previous index • '-' – if the current index is less than previous index. • '=' – if the current index is equal to previous index 	

3.19 Industry Index Broadcast

It will be coming through Cash (Capital Market) broadcast circuit. It sends the Index structure as follows:

Structure Name: MS_BCAST_INDUSTY_INDICES
Packet Length: 440 bytes
Transaction Code: BCAST_INDUSTY_INDEX_UPDATE (7203)
BCAST_HEADER (Refer to Message Header in Chapter 1) SHORT NoOfRecs struct INDUSTY_INDICES { CHAR IndustryName [15] LONG IndexValue } sIndustry [20]

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_INDUSTY_INDEX_UPDATE (7203).	
NoofRecords	This field contains the number of indices currently supported by the system.	

	Depending upon this number, there will be records filled up in subsequent INDUSTRY_INDICES structure.	
Industry	This is an array of structure. Number of records field shows how many records this structure will contain. This structure has the attributes of Industry Name and Index Value.	
IndustryName	This field contains the name of the index.	For example, Defty, Nifty
IndexValue	This field contains the on line market index value at the time of log-on.	

3.20 Spread Market by Price

It comes through the broadcast circuit and if broadcast is not available it comes through the interactive circuit. This is broadcast for every activity occurring. The structure is as follows:

Structure Name: MS_SPD_MKT_INFO
Packet Length: 186 bytes
Transaction Code: BCAST_SPD_MBP_DELTA (7211)
<pre> BCAST_HEADER (Refer to Message Header in Section 1) Struct { Long Token1 Long Token2 Short MbpBuy Short MbpSell Long LastActiveTime Long TradedVolume Double TotalTradedValue struct { Short NoOrders Long Volume Long Price } MbpBuys [5] struct { Short NoOrders Long Volume Long Price } MbpSells [5] </pre>

```

struct
{
    Double Buy
    Double Sell
}TotalOrderVolume

    Long LastUpdateTime
} BcastData
    
```

Field Name	Description	Comment
TransactionCode	The transaction code is BCAST_SPD_MBP_DELTA (7211).	
Token1	This field contains the token number of the security with early expiry date.	
Token2	This field contains the token number of the security with later expiry date.	
MBPbuy	This field contains the total number of buys for that particular combination.	
MBPsell	This field contains the total number of sells for that particular combination.	
LastActiveTime	This field contains the time stamp at which the last activity was done.	
Tradedvolume	This field contains the total number of trades today.	
TotalTradedValue	This field contains the total value of trades happened on that particular combination	
MBPSells	<p>This is an array of five, consisting of five best sell orders for the particular combination. It has the following fields:</p> <ul style="list-style-type: none"> • NoOrders which contains the number of orders with the same price. • Volume which contains the total volume ordered with the same price. • Price which contains the price of the orders. 	
MBPbuys	<p>This is an array of five, consisting of five best buy orders for the particular combination. It has the following fields:</p> <ul style="list-style-type: none"> • NoOrders which contains the number of orders with the same price. 	

Field Name	Description	Comment
	<ul style="list-style-type: none"> Volume which contains the total volume ordered with the same price. Price which contains the price of the orders. 	
TotalOrderVolume	This structure is made of the following fields: <ul style="list-style-type: none"> Buy which contains the total buy volume ordered for the particular combination. Sell which contains the total sell volume ordered for the particular combination. 	
LastUpdateTime	This field contains the time stamp at which the last activity was done. This is same as LastActiveTime.	

3.21 Underlying Open Interest

This information is sent for the open interest of the underlying asset.

The structure sent is as follows:

Structure Name: CM_ASSET_OI
Packet Length: 502 bytes
Transaction Code: MKT_MVMT_CM_OI_IN (7130)
Reserved 1 byte Reserved 1 byte LONG LogTime CHAR MarketType [2] SHORT TransactionCode SHORT NoOfRecords Reserved 8 byte CHAR TimeStamp [8] Reserved 8 byte SHORT MessageLength Struct OPEN INTEREST [58]

Structure Name: OPEN INTEREST
Packet Length: 8 bytes

LONG	Token No
LONG	CurrentOi

Field Name	Description	Comment
TransactionCode	The transaction code is MKT_MVMT_CM_OI_IN (7130).	
LogTime	This field should be set to zero while sending messages to the host end. For messages coming from the host, this contains the time the message was generated by the trading system.	
MarketType	It contains the Market Type for the transaction code MKT_MVMT_CM_OI_IN.	
NoOfRecords	It contains the number of times (maximum 58) the OPEN INTEREST is repeated.	
TimeStamp	This field contains the time when the message (reply) is sent from the host.	
TokenNumber	This field contains the token number of the underlying asset.	
CurrentOI	This field contains the Current Open Interest of the underlying asset.	

4 Appendix A

4.1 List of transaction codes:

Transaction Code	Code	Structure	Size	I/B*
BCAST_SPD_MBP_DELTA	7211	MS_SPD_MKT_INFO	186	B
RPRT_MARKET_STATS_OUT_RPT	1833	MS_RP_MARKET_STATS REPORT_TRAILER REPORT_HEADER	486 44 104	B
BCAST_JRNL_VCT_MSG	6501	MS_TRADER_INT_MSG	285	B
BC_OPEN_MESSAGE	6511	MS_BCAST_VCT_MSGS	318	B
BC_CLOSE_MESSAGE	6521	MS_BCAST_VCT_MSGS	318	B
BC_PREOPEN_SHUTDOWN_MSG	6531	MS_BCAST_VCT_MSGS	318	B
BC_CIRCUIT_CHECK	6541	MESSAGE_HEADER	38	B
BC_NORMAL_MKT_PREOPEN_ENDED	6571	MS_BCAST_VCT_MSGS	318	B
BCAST_MW_ROUND_ROBIN	7201	MS_FO_BCAST_INQ_RES P_2	470	B
BCAST_TICKER_AND_MKT_INDEX	7202	MS_FO_TICKER_TRADE_DATA	482	B
BCAST_INDUSTRY_INDEX_UPDATE	7203	MS_BCAST_INDUSTRY_I NDICES		B
BCAST_SYSTEM_INFORMATION_OUT	7206	MS_SYSTEM_INFO_DATA	103	B
BCAST_SECURITY_STATUS_CHG_P REOPEN	7210	MS_SECURITY_STATUS_ UPDATE_INFO	496	B
BCAST_SECURITY_MSTR_CHG	7305	MS_SECURITY_UPDATE_ INFO	296	B/I
BCAST_PART_MSTR_CHG	7306	PARTICIPANT_UPDATE_I NFO	82	B
BCAST_SECURITY_STATUS_CHG	7320	MS_SECURITY_STATUS_ UPDATE_INFO	496	B

Transaction Code	Code	Structure	Size	I/B*
BCAST_ONLY_MBP	7208	MS_BCAST_ONLY_MBP	468	B
RPRT_MARKET_STATS_OUT_RPT	1833	MS_RP_MARKET_STATS REPORT_TRAILER REPORT_HEADER	486 44 104	B
BCAST_SPD_MBP_DELTA	7211	MS_SPD_MKT_INFO	186	B
SECURITY_OPEN_PRICE	6013	MS_SEC_OPEN_MSGS	58	B
BCAST_JRNL_VCT_MSG	6501	MS_TRADER_INT_MSG	285	B
BC_OPEN_MESSAGE	6511	MS_BCAST_VCT_MSGS	318	B
BC_CLOSE_MESSAGE	6521	MS_BCAST_VCT_MSGS	318	B
BC_PREOPEN_SHUTDOWN_MSG	6531	MS_BCAST_VCT_MSGS	318	B
BC_CIRCUIT_CHECK	6541	MESSAGE_HEADER	38	B
BC_NORMAL_MKT_PREOPEN_ENDED	6571	MS_BCAST_VCT_MSGS	318	B
DOWNLOAD_REQUEST	7000	MS_MESSAGE_DOWNLOAD	46	I
HEADER_RECORD	7011	MESSAGE_HEADER	38	I
MESSAGE_RECORD	7021	MESSAGE_HEADER	38	I
TRAILER_RECORD	7031	MESSAGE_HEADER	38	I
MKT_MVMT_CM_OI_IN	7130	CM_ASSET_OI	500	B
BCAST_MW_ROUND_ROBIN	7201	MS_FO_BCAST_INQ_RESP_2	470	B
BCAST_TICKER_AND_MKT_INDEX	7202	MS_FO_TICKER_TRADE_DATA	482	B
BCAST_INDUSTRY_INDEX_UPDATE	7203	MS_BCAST_INDUSTRY_INDICES		B
BCAST_SYSTEM_INFORMATION_OUTPUT	7206	MS_SYSTEM_INFO_DATA	103	B
BCAST_SECURITY_MSTR_CHG	7305	MS_SECURITY_UPDATE_INFO	296	B
BCAST_PART_MSTR_CHG	7306	PARTICIPANT_UPDATE_INFO	82	B

Transaction Code	Code	Structure	Size	I/B*
BCAST_INSTR_MSTR_CHG	7324	MS_INSTRUMENT_UPDATE_INFO	76	I/B
BCAST_MBO_MBP_UPDATE	7200	MS_BCAST_MBO_MBP	388	B

* I/B - Interactive/Broadcast

4.2 Market Type

The market types are

Market Status Id	Status
1	Normal Market
2	Odd Lot Market (Not used)
3	Spot Market (Not used)
4	Auction Market (Not used)

4.3 Market Status

The market can be one of these following status.

Market Status Id	Status
0	PreOpen (only for Normal Market)
1	Open
2	Closed
3	PreOpenEnded
4	Postclose (Not used)

4.4 Book Types

There are seven books. These books fall in four markets.

Book ID	Book Type	Market Type
1	Regular lot order	Normal Market
2	Special terms order	Normal Market
3	Stop loss / MIT order	Normal Market

4	Negotiated order (Not used)	Normal Market
5	Odd lot order (Not used)	Odd Lot Market
6	Spot order (Not used)	Spot Market
7	Auction order (Not used)	Auction Market

4.5 Security Status

Status ID	Status
1	Preopen
2	Open
3	Suspended
4	Preopen Extended
5	Open With Market

5 Appendix B

PIPE DELIMITED FILE STRUCTURES

The upload files have a header record at the beginning of the file followed by the detail records. All the fields in both the header and detail records are separated by pipe ('|'). The fields are not of fixed width. Any two fields are separated by a '|' symbol.

5.1 Contract File Structure

Header

CHAR NEATFO [6]
 Reserved 1 byte
 CHAR VersionNumber [5]
 Reserved 1 byte

Stock Structure

LONG Token
 Reserved 1 byte
 LONG AssetToken
 Reserved 1 byte
 CHAR InstrumentName [6]
 Reserved 1 byte
 CHAR Symbol [10]
 Reserved 1 byte
 CHAR Series [2]
 Reserved 2 byte
 LONG ExpiryDate (in seconds from January 1, 1980)
 Reserved 1 byte
 LONG StrikePrice
 Reserved 1 byte
 CHAR OptionType [2]
 Reserved 1 byte
 CHAR Category[1]
 Reserved 1 byte
 SHORT CALevel
 Reserved 2 byte
 SHORT PermittedToTrade
 Reserved 1 byte
 SHORT IssueRate
 Reserved 1 byte
 ST_SEC_ELIGIBILITY_PER_MARKET [4]
 {

```

        SHORT      Security Status
        Reserved 1 byte
        CHAR        Eligibility
        Reserved 2 byte
    }
LONG      IssueStartDate
Reserved 1 byte
LONG      InterestPaymentDate
Reserved 1 byte
LONG      Issue Maturity Date
Reserved 1 byte
LONG      MarginPercentage
Reserved 1 byte
LONG      MinimumLotQuantity
Reserved 1 byte
LONG      BoardLotQuantity
Reserved 1 byte
LONG      TickSize
Reserved 1 byte
DOUBLE    IssuedCapital
Reserved 1 byte
LONG      FreezeQuantity
Reserved 1 byte
LONG      WarningQuantity
Reserved 1 byte
LONG      ListingDate
Reserved 1 byte
LONG      ExpulsionDate
Reserved 1 byte
LONG      ReadmissionDate
Reserved 1 byte
LONG      RecordDate
Reserved 1 byte
LONG      NoDeliveryStartDate
Reserved 1 byte
LONG      NoDeliveryEndDate
Reserved 1 byte
LONG      LowPriceRange
Reserved 1 byte
LONG      HighPriceRange
Reserved 1 byte
LONG      ExDate
Reserved 1 byte
LONG      BookClosureStartDate
Reserved 1 byte
LONG      BookClosureEndDate
Reserved 1 byte
LONG      LocalLDBUpdateDateTime
    
```

Reserved 1 byte
 LONG ExerciseStartDate
 Reserved 1 byte
 LONG ExerciseEndDate
 Reserved 1 byte
 SHORT TickerSelection
 Reserved 1 byte
 LONG OldTokenNumber
 Reserved 1 byte
 CHAR CreditRating [12]
 Reserved 1 byte
 CHAR Name [25]
 Reserved 1 byte
 CHAR EGMAGM
 Reserved 1 byte
 CHAR InterestDivident
 Reserved 1 byte
 CHAR RightsBonus
 Reserved 1 byte
 CHAR MFAON
 Reserved 1 byte
 CHAR Remarks [24]
 Reserved 1 byte
 CHAR ExStyle
 Reserved 1 byte
 CHAR ExAllowed
 Reserved 1 byte
 CHAR ExRejectionAllowed
 Reserved 1 byte
 CHAR PIAAllowed
 Reserved 1 byte
 CHAR CheckSum
 Reserved 1 byte
 CHAR IsCOorporateAdjusted
 Reserved 1 byte
 CHAR SymbolForAsset [10]
 Reserved 1 byte
 CHAR InstrumentOfAsset [6]
 Reserved 1 byte
 LONG BasePrice
 Reserved 1 byte
 CHAR DeleteFlag

Field Name	Descriptions	Comments
Token	Token number of the security being updated. This is unique for a particular symbol-series	

Field Name	Descriptions	Comments
	combination.	
AssetToken	Token Number of the asset.	
SecurityInformation	This contains the Instrument Name, Symbol & Series (EQ / IL / TT), Expiry date, Strike Price, Option Type, Category (the market hours in which contract is available to trade), Corporate Action level of the security	Following will be the values of category. '1' : Represents Regular market hours. '2' : Represents Extended market hours.
PermittedToTrade	<ul style="list-style-type: none"> • '0' - Listed but not permitted to trade • '1' - Permitted to trade 	
IssueRate	Price of the issue.	
Eligibility	The flag is set to 1 if the security is allowed to trade in a particular market.	
SecurityStatus	<ul style="list-style-type: none"> • '1' - Preopen (Only for Normal market) • '2' - Open • '3' - Suspended • '4' - Preopen extended • '5' - Stock Open With Market 	
IssueStartDate	Date of issue of the security.	
InterestPaymentDate	Interest Payment Date	
IssueMaturityDate	Maturity Date.	
MarginPercent	It is Initial margin percent to be collected on a contract.	
MinimumLotQuantity	It is minimum lot of the order which can be placed.	
BoardLotQuantity	Regular lot size.	
TickSize	Tick size/ Min spread size.	
IssuedCapital	Issue size of the security.	
FreezeQuantity	Freeze quantity.	
WarningQuantity	Warning quantity.	
ListingDate	Date of listing.	
ExpulsionDate	Date of expulsion.	

Field Name	Descriptions	Comments
ReAdmissionDate	Date of readmission.	
RecordDate	Date of record changed.	
NoDeliveryStartDate	Date from when physical delivery of share certificates is stopped for book closure.	
NoDeliveryEndDate	No delivery end date.	
NoDeliveryEndPrice	Minimum price at which order can be placed without causing a price freeze.	
HighPriceRange	Minimum price at which order can be placed without causing a price freeze.	
ExDate	Last date of trading before any corporate action.	
BookClosureStartDate	Date at which the record books in the company for shareholder names starts.	
BookClosureEndDate	Date at which the record books in the company for shareholder names ends.	
LocalLDBUpdateDateTime	This is the local database update date-time.	
ExerciseStartDate	This is the starting date for Exercise.	
ExerciseEndDate	This is the last date for Exercise.	
OldTokenNumber	Not used.	
CreditRating	Credit rating of the security.	
Name	Security name.	
EGM/AGM	<ul style="list-style-type: none"> • '0' - No EGM/AGM • '1' - EGM • '2' - AGM • '3' - Both EGM and AGM 	
InterestDividend	<ul style="list-style-type: none"> • '0' - No Interest/ Dividend • '1' - Interest • '2' - Dividend 	
RightsBonus	<ul style="list-style-type: none"> • '0' - No Rights/Bonus • '1' - Rights • '2' - Bonus 	

Field Name	Descriptions	Comments
	<ul style="list-style-type: none"> • '3' - Both Rights and Bonus 	
MFAON	<ul style="list-style-type: none"> • '0' - MF/AON not allowed • '1' - MF allowed • '2' - AON allowed • '3' - MF and AON allowed 	
Remark	Remarks	
ExStyle	<ul style="list-style-type: none"> • 'A' - American style Exercise allowed • 'E' - European style Exercise allowed 	
ExAllowed	Exercise is allowed on this contract if this Flag is set to true.	
ExRejectionAllowed	Exercise rejection is allowed on this contract if this bit is set to true.	
PIAllowed	Position liquidation is allowed on this contract if this flag is set to true.	
Checksum	Not used.	
IsCorporateAdusted	This field shows whether this Contract is Corporate Adjusted.	
AssetName	Name of the underlying asset.	For example, NIFTY.
InstrumentIDofAsset	ID of the Instrument for the underlying asset of this contract.	
AssetInstrument	Underlying asset type.	For example, INDEX.
BasePrice	Base price of the security.	
DeleteFlag	This indicates the status of the security, whether the security is deleted or not. <ul style="list-style-type: none"> • 'N' : Active • 'Y' : Deleted 	

5.2 Participant File Structure

Header

CHAR NEATFO [6]
 Reserved 1 byte
 CHAR VersionNumber [5]
 Reserved 1 byte

Structure

CHAR ParticipantId [12]
 Reserved 1 byte
 CHAR ParticipantName [25]
 Reserved 1 byte
 CHAR ParticipantStatus
 Reserved 1 byte
 CHAR DeleteFlag
 Reserved 1 byte
 LONG LastUpdateTime

Field Name	Descriptions	Comments
ParticipantId	ID of the Participant	
ParticipantName	Name of the participant	
ParticipantStatus	If this field is 'S' then the Participant is Suspended. If this is 'A' then the Participant is Active.	
DeleteFlag	If this field is 'Y' then the participant is deleted from the system, else he is present in the system.	
LastUpdateTime	The last time this record was modified.	

5.3 Security File Structure

Header

CHAR NEATCM [6]
 Reserved 1 byte

CHAR VersionNumber [7]
 Reserved 1 byte
 LONG CreationTime

Security Structure

SHORT Token
 Reserved 1 byte
 CHAR Symbol [10]
 Reserved 1 byte
 CHAR Series [2]
 Reserved 1 byte
 SHORT InstrumentType
 Reserved 1 byte
 DOUBLE IssuedCapital
 Reserved 1 byte
 SHORT PermittedToTrade
 Reserved 1 byte
 CHAR CreditRating [17]
 Reserved 1 byte
 ST_SEC_ELIGIBILITY_PER_MARKET [4]
 {
 SHORT Security Status
 Reserved 1 byte
 CHAR Eligibility
 Reserved 1 byte
 }
 LONG BoardLotQty
 Reserved 1 byte
 LONG TickSize
 Reserved 1 byte
 CHAR Name [25]
 Reserved 1 byte
 SHORT IssueRate
 Reserved 1 byte
 LONG IssueStartDate
 Reserved 1 byte
 LONG IssueIPDate
 Reserved 1 byte
 LONG Issue Maturity Date
 Reserved 1 byte
 SHORT FreezePercent
 Reserved 1 byte
 LONG ListingDate
 Reserved 1 byte
 LONG ExpulsionDate
 Reserved 1 byte
 LONG ReAdmissionDate

Reserved 1 byte
LONG ExDate
Reserved 1 byte
LONG RecordDate
Reserved 1 byte
LONG NoDeliveryStartDate
Reserved 1 byte
LONG NoDeliveryEndDate
Reserved 1 byte
CHAR ParticipateInIndex
Reserved 1 byte
CHAR AON
Reserved 1 byte
CHAR MinFill
Reserved 1 byte
SHORT WarningPercent
Reserved 1 byte
LONG BookClosureStartDate
Reserved 1 byte
LONG BookClosureEndDate
Reserved 1 byte
CHAR Dividend
Reserved 1 byte
CHAR Rights
Reserved 1 byte
CHAR Bonus
Reserved 1 byte
CHAR Interest
Reserved 1 byte
CHAR AGM
Reserved 1 byte
CHAR EGM
Reserved 1 byte
CHAR Remark [25]
Reserved 1 byte
LONG LocalDBUpdateDateTime
Reserved 1 byte
CHAR DeleteFlag
Reserved 1 byte
LONG FaceValue
Reserved 1 byte
CHAR ISIN [12]

Field Name	Descriptions	Comments
Token	Token number of the security being updated. This is unique for a particular symbol-series combination.	
SecurityInformation	This contains the Symbol , Series (EQ / IL / TT) & Instrument type	
IssuedCapital	Issue size of the security.	
PermittedToTrade	<ul style="list-style-type: none"> • '0' - Listed but not permitted to trade • '1' - Permitted to trade 	
CreditRating	Credit rating of the security.	
SecurityStatus	<ul style="list-style-type: none"> • '1' - Preopen (Only for Normal market) • '2' - Open • '3' - Suspended • '4' - Preopen extended • '5' - Stock Open With Market 	
Eligibility	The flag is set to 1 if the security is allowed to trade in a particular market.	
BoardLotQuantity	Regular lot size.	
TickSize	Tick size/ Min spread size.	
Name	Security name.	
IssueRate	Price of the issue.	
IssueStartDate	Date of issue of the security.	
InterestPaymentDate	Interest Payment Date	
IssueMaturityDate	Maturity Date.	
FreezePercent	Freeze Percent for the security.	
ListingDate	Date of listing.	
ExpulsionDate	Date of expulsion.	
ReAdmissionDate	Date of readmission.	
ExDate	Last date of trading before any corporate action.	

Field Name	Descriptions	Comments
RecordDate	Date of record changed.	
NoDeliveryStartDate	Date from when physical delivery of share certificates is stopped for book closure.	
NoDeliveryEndDate	No delivery end date.	
ParticipateInIndex	<ul style="list-style-type: none"> • '0' - Not Participate In Index • '1' - Participate In Index 	
AON	<ul style="list-style-type: none"> • '0' - AON not allowed • '1' - AON allowed 	
MF	<ul style="list-style-type: none"> • '0' - MF not allowed • '1' - MF allowed 	
Warning Percent	Warning Percent	
BookClosureStartDate	Date at which the record books in the company for shareholder names starts.	
BookClosureEndDate	Date at which the record books in the company for shareholder names ends.	
Dividend	<ul style="list-style-type: none"> • '0' - No Dividend • '1' - Dividend 	
Rights	<ul style="list-style-type: none"> • '0' - No Rights • '1' - Rights 	
Bonus	<ul style="list-style-type: none"> • '0' - No Bonus • '1' - Bonus 	
Interest	<ul style="list-style-type: none"> • '0' - No Interest • '1' - Interest 	
EGM	<ul style="list-style-type: none"> • '0' - No EGM • '1' - EGM 	
AGM	<ul style="list-style-type: none"> • '0' - No AGM • '1' - AGM 	
Remark	Remarks	
LocalLDBUpdateDateTime	This is the local database update date-time.	
DeleteFlag	This indicates the status of the security, whether the security is deleted or not. <ul style="list-style-type: none"> • 'N' : Active 	

Field Name	Descriptions	Comments
	<ul style="list-style-type: none"> • 'Y' : Deleted 	
Face value	Face value of security	Already present in security.txt but was not used. To correctly use the ISIN field face value should be considered.
ISIN	ISIN number of security	