

NATIONAL STOCK EXCHANGE OF INDIA LIMITED**DEPARTMENT : FUTURES & OPTIONS**

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All Members,

Consolidated circular on Market Data

This circular is in consolidation of all the previous circulars issued on Market data broadcast.

The exchange provides market data (price and volume related) to its trading members in the form of Market by Price (MBP) and Market by Order (MBO) for Auction market. Some related data is also provided in the form of Trade Ticker, Open Interest (OI), Open High Low (OHL), Auction Inquiry broadcast, Master Updates, Market Open/Close Status message broadcast, Trade Execution Range (TER) etc. Market data broadcast is refreshed either at fixed time interval or are event driven. The Exchange also provides tick by tick order and trade information.

Members may refer the following annexures for access details and setup required on their systems in order to receive the market data broadcast:

Sr No.	Market Type Data	Segment	Annexure
1.	Price volume, other related data, master updates, market open/close status message broadcast, Trade Execution Range etc.	Capital Market (CM) Futures & Options (FO) Currency Derivatives (CD)	Annexure 1
2.	Tick by Tick order and trade data via Multicast	Capital Market (CM) Futures & Options (FO) Currency Derivatives (CD)	Annexure 2

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Annexure 1

A) Price volume (5 depth 1 second refresh), other related data, master updates, market open/close status message broadcast etc.

Stream	Security / Contracts	Multicast IP	Port	Approx bandwidth utilization
CM (Source 1)	Active	239.50.50.12	10812	450 Kbps
CM (Source 2)		239.50.50.17	10817	450 Kbps
CD (Source 1)	Active	239.50.50.72	10872	150 Kbps
CD (Source 2)		239.50.50.77	10877	150 Kbps
FO (Source 1)	Most Active	239.50.50.21	10821	350 Kbps
FO (Source 2)		239.50.50.26	10826	350 Kbps
FO – Stream A (Source 1)	Active	239.50.50.22	10822	1.5 Mbps
FO – Stream A (Source 2)		239.50.50.27	10827	1.5 Mbps

B) Price volume (5 depth 1 second refresh), other related data, master updates, market open/close status message broadcast etc. (New Market data structure broadcast)

Stream	Security / Contracts	Multicast IP	Port	Approx bandwidth utilization
CM – (Source 1)	Most Active	239.50.52.12	25012	700 Kbps
		239.50.50.13	10813	
CM – (Source 2)	Most Active	239.50.52.132	25132	700 Kbps
		239.50.50.18	10818	
FO – (Source 1)	Most Active	239.50.52.42	25042	750 Kbps
		239.50.50.23	10823	
FO – (Source 2)	Most Active	239.50.52.162	25162	750 Kbps
		239.50.50.28	10828	
FO – (Source 1)	Active	239.50.52.41	25041	1.1 Mbps
		239.50.50.23	10823	
FO – (Source 2)	Active	239.50.52.161	25161	1.1 Mbps
		239.50.50.28	10828	
CD – (Source 1)	Most Active	239.50.52.72	25072	100 Kbps
		239.50.50.73	10873	
CD – (Source 2)	Most Active	239.50.52.192	25192	100 Kbps
		239.50.50.78	10878	

C) Price volume (5 depth 1 second refresh), other related data, master updates, market open/close status message broadcast etc. on additional streams available only in FO segment

Stream	Security / Contracts	Multicast IP	Port	Approx. bandwidth utilization
FO – Stream B (Source 1)	NIFTY option contracts	239.50.51.21	15021	1.5 Mbps
		239.50.51.20	15020	
FO – Stream B (Source 2)		239.50.51.121	15121	1.5 Mbps
		239.50.51.20	15020	

FO – Stream C (Source 1)	NIFTY futures contracts All other Index futures and option contracts (other than NIFTY and BANKNIFTY)	239.50.51.22	15022	1.5 Mbps
FO – Stream C (Source 2)		239.50.51.20	15020	
FO – Stream D (Source 1)	Stock futures and Options (For symbol starting S to Z)	239.50.51.122	15122	1.5 Mbps
FO – Stream D (Source 2)		239.50.51.20	15020	
FO – Stream E (Source 1)	Stock futures and Options (For symbol starting I to L)	239.50.51.23	15023	1.5 Mbps
FO – Stream E (Source 2)		239.50.51.20	15020	
FO – Stream F (Source 1)	BANKNIFTY futures and option contracts	239.50.51.123	15123	1.5 Mbps
FO – Stream F (Source 2)		239.50.51.20	15020	
FO – Stream G (Source 1)	Stock futures and Options (For symbol starting A to B)	239.50.51.24	15024	1.5 Mbps
FO – Stream G (Source 2)		239.50.51.20	15020	
FO – Stream H (Source 1)	Stock futures and Options (For symbol starting C to H)	239.50.51.124	15124	1.5 Mbps
FO – Stream H (Source 2)		239.50.51.20	15020	
FO – Stream I (Source 1)	Stock futures and Options (For symbol starting M to R)	239.50.51.25	15025	1.5 Mbps
FO – Stream I (Source 2)		239.50.51.20	15020	
FO – Stream J (Source 1)	Stock futures and Options (For symbol starting T to Z)	239.50.51.125	15125	1.5 Mbps
FO – Stream J (Source 2)		239.50.51.20	15020	
FO – Stream K (Source 1)	Stock futures and Options (For symbol starting A to B)	239.50.51.26	15026	1.5 Mbps
FO – Stream K (Source 2)		239.50.51.20	15020	
FO – Stream L (Source 1)	Stock futures and Options (For symbol starting C to H)	239.50.51.126	15126	1.5 Mbps
FO – Stream L (Source 2)		239.50.51.20	15020	
FO – Stream M (Source 1)	Stock futures and Options (For symbol starting I to L)	239.50.51.27	15027	1.5 Mbps
FO – Stream M (Source 2)		239.50.51.20	15020	
FO – Stream N (Source 1)	Stock futures and Options (For symbol starting M to R)	239.50.51.127	15127	1.5 Mbps
FO – Stream N (Source 2)		239.50.51.20	15020	
FO – Stream O (Source 1)	Stock futures and Options (For symbol starting T to Z)	239.50.51.28	15028	1.5 Mbps
FO – Stream O (Source 2)		239.50.51.20	15020	
FO – Stream P (Source 1)	Stock futures and Options (For symbol starting A to B)	239.50.51.128	15128	1.5 Mbps
FO – Stream P (Source 2)		239.50.51.20	15020	

Note:

- Members are requested to note that Only Source 1 Broadcast from Table B is applicable for VSAT users. However for FO users only FO Source -1 Active broadcast is available on VSAT.
- Members can subscribe to Source 1 or Source 2 or both as per their requirement keeping in mind the bandwidth available with them.
- With regards to new market data structure broadcast, NNF users may note that they can refer file “cm_index_token_mstr.txt” to identify the index tokens. This file is available on extranet under path “/common/ntneat/”

D) Trade Execution Range (TER) Broadcast

Trade Execution Range is applicable only in FO and CD segment and exchange provides related broadcast for NNF users as below:

Security / Contracts	Multicast IP	Multicast Port	Segment	Approximate bandwidth utilization
Trade Execution Range (TER)	239.55.55.21	55021	FO	50.0 Kbps
	239.55.55.71	55071	CD	1.0 Kbps

Annexure 2

Tick by Tick order and trade data via Multicast (MTBT)

A) Master Files for MTBT

(i) Members have to refer to MTBT master files for mapping information about the stream id and token number of the security/contract. The master files are available in the following path:-

Segment	Extranet path
CM	/common/tbt_masters
FO	/faoftp/faocommon/tbt_masters
CD	/cdsftp/cdscommon/tbt_masters

(ii) Members' desirous of receiving the content of the master files via broadcast may configure the below parameters for respective segments-

MTBT- Master Multicast Parameters			
Segment	Stream ID	Multicast IP Address	Multicast Port
CM	101	239.60.60.11	10611
FO	101	239.70.70.11	10811
CD	101	239.80.80.13	10813

B) Segment wise details of IP address and port are as below:

CM						
		Source 1		Source 2		Approx. bandwidth utilization
Stream ID	Contents	Multicast IP Address	Multicast Port	Multicast IP Address	Multicast Port	
1	As per master stream file	239.60.60.21	10621	239.60.60.31	10631	3.0 Mbps
2	As per master stream file	239.60.60.22	10622	239.60.60.32	10632	3.0 Mbps
3	As per master stream file	239.60.60.23	10623	239.60.60.33	10633	3.0 Mbps
4	As per master stream file	239.60.60.24	10624	239.60.60.34	10634	3.0 Mbps

FO						
		Source 1		Source 2		Approx. bandwidth utilization
Stream ID	Contents	Multicast IP Address	Multicast Port	Multicast IP Address	Multicast Port	
1	Nifty options	239.70.70.21	10821	239.70.70.31	10831	21.0 Mbps
2	NIFTY futures contracts and all other Index futures and option contracts (other than NIFTY and BANKNIFTY)	239.70.70.22	10822	239.70.70.32	10832	4.0 Mbps
3	Stock futures and Options (For symbol starting S to Z)	239.70.70.23	10823	239.70.70.33	10833	11.0 Mbps
4	Stock futures and Options (For symbol starting I to L)	239.70.70.24	10824	239.70.70.34	10834	9.0 Mbps
5	BANKNIFTY futures and options	239.70.70.25	10825	239.70.70.35	10835	17.0 Mbps
6	Stock futures and Options (For symbol starting A to B)	239.70.70.26	10826	239.70.70.36	10836	8.0 Mbps
7	Stock futures and Options (For symbol starting C to H)	239.70.70.27	10827	239.70.70.37	10837	4.0 Mbps
8	Stock futures and Options (For symbol starting M to R)	239.70.70.28	10828	239.70.70.38	10838	3.0 Mbps
11	Only Nifty Options	239.70.71.11	17011	239.70.71.111	17111	7.0 Mbps
21	Only Nifty Futures	239.70.71.21	17021	239.70.71.121	17121	2.0 Mbps
22	All Index Futures of top 5 index (other than Nifty and Bank Nifty)	239.70.71.22	17022	239.70.71.122	17122	10.0 Kbps
23	All index Options of top 5 index (other than Nifty and Bank Nifty)	239.70.71.23	17023	239.70.71.123	17123	1.0 Kbps
24	All Index Futures other than Nifty and Bank Nifty	239.70.71.24	17024	239.70.71.124	17124	10.0 Kbps
25	All Index Options other than Nifty and Bank Nifty	239.70.71.25	17025	239.70.71.125	17125	1.0 Kbps
31	All Stock Futures of top 5 underlying (symbol S to Z)	239.70.71.31	17031	239.70.71.131	17131	1.0 Mbps
32	All Stock Options of top 5 underlying (symbol S to Z)	239.70.71.32	17032	239.70.71.132	17132	1.0 Mbps

33	All single Stock Futures (symbol S to Z)	239.70.71.33	17033	239.70.71.133	17133	2.0 Mbps
34	All single Stock Options (symbol S to Z)	239.70.71.34	17034	239.70.71.134	17134	2.0 Mbps
41	All Stock Futures of top 5 underlying (symbol I to L)	239.70.71.41	17041	239.70.71.141	17141	1.0 Mbps
42	All Stock Options of top 5 underlying(symbol I to L)	239.70.71.42	17042	239.70.71.142	17142	1.0 Mbps
43	All single Stock Futures (symbol I to L)	239.70.71.43	17043	239.70.71.143	17143	2.0 Mbps
44	All single Stock Options (symbol I to L)	239.70.71.44	17044	239.70.71.144	17144	2.0 Mbps
51	All BANKNIFTY Futures	239.70.71.51	17051	239.70.71.151	17151	1.5 Mbps
52	All BANKNIFTY Options	239.70.71.52	17052	239.70.71.152	17152	5.0 Mbps
61	All Stock Futures of top 5 underlying (symbol A to B)	239.70.71.61	17061	239.70.71.161	17161	1.0 Mbps
62	All Stock Options of top 5 underlying (symbol A to B)	239.70.71.62	17062	239.70.71.162	17162	1.0 Mbps
63	All single Stock Futures (symbol A to B)	239.70.71.63	17063	239.70.71.163	17163	1.5 Mbps
64	All single Stock Options (Symbol A to B)	239.70.71.64	17064	239.70.71.164	17164	1.5 Mbps
71	All Stock Futures of top 5 underlying (symbol C to H)	239.70.71.71	17071	239.70.71.171	17171	1.0 Mbps
72	All Stock Options of top 5 underlying (symbol C to H)	239.70.71.72	17072	239.70.71.172	17172	1.0 Mbps
73	All single Stock Futures (symbol C to H)	239.70.71.73	17073	239.70.71.173	17173	2.0 Mbps
74	All single Stock Options (Symbol C to H)	239.70.71.74	17074	239.70.71.174	17174	2.0 Mbps
81	All Stock Futures of top 5 underlying (symbol M to R)	239.70.71.81	17081	239.70.71.181	17181	1.0 Mbps
82	All Stock Options of top 5 underlying (symbol M to R)	239.70.71.82	17082	239.70.71.182	17182	1.0 Mbps
83	All single Stock Futures (symbol M to R)	239.70.71.83	17083	239.70.71.183	17183	1.5 Mbps
84	All single Stock Options (symbol M to R)	239.70.71.84	17084	239.70.71.184	17184	2.0 Mbps

CD						
		Source 1		Source 2		Approx. bandwidth utilization
Stream ID	Contents	Multicast IP Address	Multicast Port	Multicast IP Address	Multicast Port	
1	All currency pairs and interest rate futures	239.80.80.21	10821	239.80.80.31	10831	700 Kbps
11	USD Futures & Options	239.80.81.11	18011	239.80.81.111	18111	500 Kbps
12	All other Currency Futures	239.80.81.12	18012	239.80.81.112	18112	500 Kbps

Note: The approximate bandwidth utilization mentioned above is current utilization of each stream and will vary as per the volumes generated in market.

C) Tick agent

Tick Agent application is an optional utility provided by the exchange and can be installed at client end server for receiving tick data. Tick data which consists of orders and trades is received from the exchange on multicast by tick agent. The tick agent forwards the same data to client end applications on multicast.

Tick Agent also provides tick data recovery on TCP. If the client application loses tick data on multicast, it can request the tick agent for recovering the missed tick data on TCP.

Client end applications can receive multicast tick data directly without using tick agent. They can also recover missed tick data from the exchange directly on TCP.

The TICK Agent application file is available for members on extranet on the below path-

Segment	Tick Agent Setup Path on Extranet
CM	/common/TBT_Linux/TICK_AGENT_LINUX_1.0.3
	/common/TBT_Windows/TICK_AGENT_WINDOWS_1.3
FO	/faoftp/faocommon/TBT_Linux/TICK_AGENT_LINUX_1.0.3
	/faoftp/faocommon/TBT_Windows/TICK_AGENT_WINDOWS_1.3
CD	/cdsftp/cdscommon/TBT_Linux/TICK_AGENT_LINUX_1.0.3
	/cdsftp/cdscommon/TBT_Windows/TICK_AGENT_WINDOWS_1.3

D) Recovery of tick by tick data

The tick data feed is available on two separate multicast channels for each stream on active-active basis. Clients can receive tick data from both the channels at the same time. If tick data is lost in one channel, the same tick data may be available in other channel.

Additionally, tick data is available for recovery on TCP. There are multiple recovery servers at the exchange end who's IPs and ports are provided below. If the client end application misses any tick data it can recover the missed ticks by sending request on TCP to any of the recovery server IPs provided by the exchange. The response messages will be provided on TCP. The TCP connections for recovering messages are not persistent.

A new connection has to be made for each and every recovery request. Client end applications using tick agent can recover missed tick data on TCP by sending recovery request to the tick agent.

CM	
IP Address	Port
172.28.124.34	10984
172.28.124.35	10985
172.28.124.41	10981
172.28.124.42	10982

FO	
IP Address	Port
172.28.124.30	10990
172.28.124.31	10991
172.28.124.37	10992
172.28.124.38	10993

CD	
IP Address	Port
172.28.124.32	10970
172.28.124.33	10971
172.28.124.39	10972
172.28.124.40	10973