National Stock Exchange Of India Limited

Department : MEMBER SERVICE DEPARTMENT	
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All Members,

Market Data - Consolidated Circular

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, etc.	Capital Market (CM) Futures & Options (FO) Currency Derivatives (CD) Commodities Derivatives (CO) Securities Lending & Borrowing Market (SLBM)	Annexure 1
2.	Tick by Tick order and trade data via Multicast	Capital Market (CM) Futures & Options (FO) Currency Derivatives (CD) Commodities Derivatives (CO)	Annexure 2

For and on behalf of
National Stock Exchange of India Limited

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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	600 Kbps
CM (Source 2)		239.50.50.17	10817	600 Kbps
CD (Source 1)	Active	239.50.50.72	10872	600 Kbps
CD (Source 2)		239.50.50.77	10877	600 Kbps
FO Stream A (Source 1)	Active	239.50.50.22	10822	2.5 Mbps
FO Stream A (Source 2)		239.50.50.27	10827	2.5 Mbps
CO (Source 1)	Active	239.50.50.51	18051	80 Kbps
CO (Source 2)		239.50.50.56	10856	80 Kbps
SLBM	Active	239.50.50.61	10861	40 Kbps

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

For CM Segment:

Stream**	Stream ID	Security / Contracts**	(Source 1)		(Source 2)		Approx. bandwidth utilization
			Multicast IP	Port	Multicast IP	Port	
CM Stream 1	1	As per master stream file	239.50.51.11	15011	239.50.51.111	15111	1.5 Mbps
			239.50.51.10	15010	239.50.51.10	15010	
CM Stream 2	2	As per master stream file	239.50.51.13	15013	239.50.51.113	15113	1.5 Mbps
			239.50.51.10	15010	239.50.51.10	15010	
CM Stream 3	3	As per master stream file	239.50.51.14	15014	239.50.51.114	15114	1.5 Mbps
			239.50.51.10	15010	239.50.51.10	15010	
CM Stream 4	4	As per master stream file	239.50.51.12	15012	239.50.51.112	15112	1.5 Mbps
			239.50.51.10	15010	239.50.51.10	15010	

For FO Segment:

Stream	Stream ID	Security / Contracts *	(Source 1)		(Source 2)		Approx. bandwidth utilization
			Multicast IP	Port	Multicast IP	Port	
FO Stream B	1	As per master stream file	239.50.51.21	15021	239.50.51.121	15121	0.9 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream C	2	As per master stream file	239.50.51.22	15022	239.50.51.122	15122	1 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream D	3	As per master stream file	239.50.51.23	15023	239.50.51.123	15123	2.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream E	4	As per master stream file	239.50.51.24	15024	239.50.51.124	15124	2.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream F	5	As per master stream file	239.50.51.25	15025	239.50.51.125	15125	0.75 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream G	6	As per master stream file	239.50.51.26	15026	239.50.51.126	15126	2.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream H	7	As per master stream file	239.50.51.27	15027	239.50.51.127	15127	0.75 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream I	8	As per master stream file	239.50.51.28	15028	239.50.51.128	15128	0.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream J	9	As per master stream file	239.50.51.29	15029	239.50.51.129	15129	2.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	
FO Stream K	10	As per master stream file	239.50.51.30	15030	239.50.51.130	15130	0.6 Mbps
			239.50.51.20	15020	239.50.51.20	15020	

Members can refer file "cm_index_token_mstr.txt" to identify the index tokens. This file is available on extranet under path "/common/ntneat/"

Annexure 2

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

A) Master Files for MTBT:

Exchange provides MTBT master files for mapping information about the stream id and token number of the security/contract on specified extranet paths as mentioned below:

Segment	Extranet path	File name
CM	/ftp/common/tbt_masters	cm_contract_stream_info.csv
FO	/faoftp/faocommon/tbt_masters	fo_spd_contract_stream_info.csv fo_contract_stream_info.csv
CD	/cdsftp/cdscommon/tbt_masters	cd_contract_stream_info.csv cd_spd_contract_stream_info.csv
CO	/comtftp/comtcommon/tbt_masters	co_contract_stream_info.csv

**Members are required to refer the Master Files for MTBT for details regarding tokens broadcasted in the individual stream.*

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

Market participants are advised to monitor and adequately size their infrastructure and systems while subscribing to these feeds.

CM						
Stream ID	Contents	Source 1		Source 2 (Delayed Feed)		Approx. bandwidth utilization
		Multicast IP	Port	Multicast IP	Port	
1	As per master stream file	239.60.60.41	16641	239.60.60.31	10631	8 Mbps
2	As per master stream file	239.60.60.42	16642	239.60.60.32	10632	8 Mbps
3	As per master stream file	239.60.60.43	16643	239.60.60.33	10633	8 Mbps
4	As per master stream file	239.60.60.44	16644	239.60.60.34	10634	8 Mbps

FO						
Stream ID	Contents *	Source 1		Source 2 (Delayed Feed)		Approx. bandwidth utilization
		Multicast IP	Port	Multicast IP	Port	
1	As per master stream file	239.70.70.41	17741	239.70.70.31	10831	20 Mbps
2	As per master stream file	239.70.70.42	17742	239.70.70.32	10832	6 Mbps
3	As per master stream file	239.70.70.43	17743	239.70.70.33	10833	15 Mbps
4	As per master stream file	239.70.70.44	17744	239.70.70.34	10834	18 Mbps

5	As per master stream file	239.70.70.45	17745	239.70.70.35	10835	40 Mbps
6	As per master stream file	239.70.70.46	17746	239.70.70.36	10836	18 Mbps
7	As per master stream file	239.70.70.47	17747	239.70.70.37	10837	40 Mbps
8	As per master stream file	239.70.70.48	17748	239.70.70.38	10838	40 Mbps
9	As per master stream file	239.70.70.49	17749	239.70.70.39	10839	40 Mbps
10	As per master stream file	239.70.70.50	17750	239.70.70.40	10840	40 Mbps

CD						
Stream ID	Contents	Source 1		Source 2 (Delayed Feed)		Approx. bandwidth utilization
		Multicast IP	Port	Multicast IP	Port	
1	As per master stream file	239.80.80.41	18841	239.80.80.31	10831	1.5 Mbps
2	As per master stream file	239.80.80.42	18842	239.80.80.32	10832	1.5 Mbps

CO						
Stream ID	Contents	Source 1		Source 2 (Delayed Feed)		Approx. bandwidth utilization
		Multicast IP	Port	Multicast IP	Port	
1	All Commodity Derivatives Contracts	239.90.90.41	19941	239.90.90.51	19951	60Kbps

C) Recovery of tick by tick data

Tick by tick data is available for recovery on TCP. At the Exchange end the recovery requests are managed and serviced through a setup consisting of a load balancer server and multiple recovery servers. If the client end application misses any tick data, it can recover the missed ticks by sending request on TCP to the server IP provided by the Exchange (segment wise IPs and ports provided below). 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. The recovery requests are served from file stored in recovery server. Due to this factor, there is a lag / delay in the tick data from recovery servers, as compared to direct multicast feed.

Segment	IP Address	Port
CM	172.28.124.34	10984
FO	172.28.124.30	10990
CD	172.28.124.32	10970
CO	172.19.125.84	10960

D) Order Snapshot Recovery for Multicast Tick by Tick broadcast

MTBT Order Book Snapshot Recovery Server provides latest picture of the order book, constructed from MTBT feed. This Order Book Snapshot is refreshed every 30 seconds. Client requesting this snapshot recovery will get all the outstanding orders in the order book till the last refresh time for a particular stream.

Parameters for connecting for Order Snapshot Recovery		
IP of Solace	172.28.124.44	
Port of Solace	10987	
User Name	member_cm_prod	
Password	LxJRe#0414	
Message VPN Name	od_cm_prod	
Segment	Stream ID	QUEUE NAMES
CM	1	lvq.nse.cm.od.1.orderbook
	2	lvq.nse.cm.od.2.orderbook
	3	lvq.nse.cm.od.3.orderbook
	4	lvq.nse.cm.od.4.orderbook

Parameters for connecting for Order Snapshot Recovery		
IP of Solace	172.28.124.40	
Port of Solace	10986	
User Name	member_fo_prod	
Password	YoEvx#9675	
Message VPN Name	od_fo_prod	
Segment	Stream ID	QUEUE NAMES
FO	1	lvq.nse.fo.od.1.orderbook
	2	lvq.nse.fo.od.2.orderbook
	3	lvq.nse.fo.od.3.orderbook
	4	lvq.nse.fo.od.4.orderbook
	5	lvq.nse.fo.od.5.orderbook
	6	lvq.nse.fo.od.6.orderbook
	7	lvq.nse.fo.od.7.orderbook
	8	lvq.nse.fo.od.8.orderbook
	9	lvq.nse.fo.od.9.orderbook
	10	lvq.nse.fo.od.10.orderbook

Parameters for connecting for Order Snapshot Recovery		
IP of Solace	172.28.124.42	
Port of Solace	10988	
User Name	member_cd_prod	
Password	48Qd5d	
Message VPN Name	od_cd_prod	
Segment	Stream ID	QUEUE NAMES
CD	1	lvq.nse.cd.od.1.orderbook
	2	lvq.nse.cd.od.2.orderbook

Important usage guidelines for connecting to Order Book Snapshot recovery:

Members are suggested to use snapshot recovery whenever they have lost large number of ticks on multicast or they have joined the MTBT feed very late. This will reduce the time to recover all the missed ticks through recovery and build the order book up to the latest point.

At the Exchange end the snapshot recovery is disseminated through Solace Application / Hardware. The snapshot recovery needs to be requested by client applications through Solace API. After receiving the snapshot message, the client applications are supposed to disconnect. It is possible that the client applications can get disconnected during recovery of snapshot message, due to snapshot message being refreshed at the Exchange end. In such cases client applications can again try to recover the snapshot message.

Members are expected to use 7.14 version of SOLACE API which can be downloaded from https://solace.com/downloads/ for best experience.

General Notes applicable for all types of market data broadcast:

- *The size of broadcast indicated above is an estimated approximation and shall change depending upon the market activity. Thus, Market participants are strongly advised to monitor and adequately size their infrastructure and systems while subscribing to these feeds.*
- *With respect to using Exchange data, Member's may kindly take note of Exchange circular NSE/MEM/26958 dated June 19, 2014. Exchange data can be used by Member's clients who are registered for trading with the member on the Exchange in any segment.*
- *National Stock Exchange of India Limited ("NSEIL") strongly recommends its members to build resilience and redundancy in their subscription to market data broadcast provided by NSEIL, to ensure continuity of their business operations. NSEIL has made enabling provisions for members to implement redundancies by providing two sources of data and/or data recovery mechanisms. Members shall be solely responsible for implementing and maintaining redundancy for market data broadcast subscribed from NSEIL. NSEIL shall not be held liable in any manner whatsoever including but not limited to for any disconnection, excess bandwidth utilization, related latency issues' etc. which arises out of the member's decisions on market data broadcast configurations.*