

SECURITIES AND EXCHANGE BOARD OF INDIA

FINAL ORDER

UNDER SECTIONS 11(1), 11(2)(b), 11(4) AND SECTION 11B OF THE SEBI ACT READ WITH REGULATION 11 OF THE SECURITIES AND EXCHANGE BOARD OF INDIA (PROHIBITION OF FRAUDULENT AND UNFAIR TRADE PRACTICES RELATING TO SECURITIES MARKET) REGULATIONS, 2003 AND THE SEBI (STOCK BROKERS AND SUB BROKERS) REGULATIONS, 1992.

IN THE MATTER OF OPG SECURITIES PRIVATE LIMITED.

	NOTICEES	PAN
1.	OPG SECURITIES PRIVATE LIMITED	AAACO1081C
2.	SANJAY GUPTA	AAHPG3047Q
3.	SANGEETA GUPTA	AAHPG6984C
4.	OM PRAKASH GUPTA	AAHPG3048B
5.	AMAN KOKRADY	AKQPK3220N

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1. BACKGROUND

1.1 Securities and Exchange Board of India (“SEBI”) had received complaints dated January 8, 2015 and August 10, 2015 *inter alia* regarding the co-location facility provided by National Stock Exchange of India Limited (“NSE”) wherein it was alleged that preferential access was granted by the stock exchange to OPG Securities Private Limited (“OPG Securities/Noticee Company”) for tick-by-tick (“TBT”) data feed.

1.2 The aforementioned complaints triggered a set of preliminary enquiries, Expert Committee/Forensic Audit Reports and a SEBI Investigation in the matter. The chronology of actions taken in the instant matter leading up to the issuance of the Show Cause Notice (“SCN”) is tabulated in the next page.

TABLE I	
DATE	ACTION
NOVEMBER 30, 2015	<p>A Cross Functional Team (“CFT”) of SEBI officials that was constituted to undertake a preliminary fact finding of the allegations mentioned in the first two complaint letters, submitted its Report. Summary of major observations/findings of CFT is placed below:</p> <ol style="list-style-type: none"> a. Up until March 2014, NSE’s dissemination architecture was based entirely on time priority i.e. those Trading Members (“TMs”) who logged in first on a dissemination server/POP Server were disseminated data earlier than those who logged in later on the same POP Server. Consequently, TMs logging in first were able to get the order book earlier than those who logged in later. b. It <i>prima facie</i> appeared that since 2012, the speeds of some of the TBT Servers of NSE were higher than the others. c. OPG Securities consistently logged in first to two of NSE’s Transmission Control Protocol /Internet Protocol (“TCP/IP”) based POP Servers as well as its backup Servers. d. Number of IPs used by OPG Securities were significantly larger than the majority of the other TMs availing TBT data from NSE, during the period in which OPG Securities had consistently logged in first. e. OPG Securities traded in significantly larger quantities around the time it started consistently logging in first to the POP Servers i.e. since February 2012 till August 2013.
JANUARY 14, 2016	The findings of CFT were discussed in the SEBI Technical Advisory Committee (“ TAC ”) meeting. Based on the recommendation of TAC, IIT Bombay was requested to allow Professor Om Damani (Associate Professor, Dept. of CSE, Indian Institute of Technology, Bombay) to undertake the examination of the complaints along with SEBI officials.
MARCH 2, 2016; MAY 12, 2016 AND JUNE 29, 2016	The examination Report of the <i>Expert Committee constituted by SEBI-TAC</i> (“ TAC Expert Committee Report ”) was forwarded to NSE. NSE was advised to submit para-wise response to the findings of the Report after placing the same before NSE’s Board. NSE submitted its responses to the TAC Expert Committee Report.
SEPTEMBER 9, 2016	Vide SEBI letter dated September 9, 2016, NSE’s Board was advised to immediately initiate an independent examination (including forensic investigation by an external agency) of all the concerns highlighted in the TAC Expert Committee Report including lack of processes which allowed such irregularities to occur and collusion, if any, and fix accountability for the aforesaid breaches covering NSE and TMs, vendors and outsourced entities involved in the issue. NSE’s Board was advised to complete the said investigation and submit a comprehensive Report to SEBI within a period of three months from the date of the aforesaid letter. Further, as an <i>interim</i> measure, pending investigation and submission of such Report to the satisfaction of SEBI, it was directed by SEBI that all revenues emanating from co-location facility including from any fibre connectivity from TM’s co-location facility to their offices, shall be placed in an Escrow Account.
NOVEMBER 10, 2016	NSE informed that its Board had appointed Deloitte Touche Tohmatsu India LLP (“ Deloitte ”) to conduct the forensic investigation.
DECEMBER 23, 2016	NSE submitted the Project Borse Report made by Deloitte covering co-location facility.
FEBRUARY 28, 2017	<p>On the basis of observations of the TAC Expert Committee Report and Deloitte Report, NSE was <i>inter alia</i> advised to –</p> <ol style="list-style-type: none"> a. Undertake a similar forensic audit in Cash Market, Currency Derivatives and Interest Rate Futures for the period 2010–2015.

	<ul style="list-style-type: none"> b. Undertake necessary examination to estimate the benefits/profits to the TMs through the alleged mechanisms. c. Institute an enquiry to ascertain why 'Load Balancer' and 'Randomizer' for TCP-IP based TBT data feeds were not implemented. d. Examine the role played by its employees (including former employees) whose names have been mentioned in the Deloitte Report to establish whether the conduct of its employees and TMs would amount to collusion/connivance.
AUGUST 22, 2017 JANUARY 17, 2018	Forensic Auditors, viz. Deloitte and Ernst and Young (“ E&Y ”), were appointed by SEBI to conduct forensic audit of 14 TMs (7 TMs each). Deloitte was engaged by SEBI for conducting forensic audit of Barclays Securities India Pvt. Limited (“ Barclays ”).
DECEMBER 14, 2017 MAY 18, 2018 JUNE 2018	Report submitted by E&Y for forensic audit of Cash, Currency Derivatives and Interest Rate Futures segment of NSE was discussed in TAC meeting wherein E&Y was <i>inter alia</i> advised to submit revised Report in light of the recommendations of TAC. Revised Report submitted to SEBI by E&Y for Cash, Currency Derivatives and Interest Rate Futures segments of NSE. Forensic Auditors (Deloitte and E&Y) submitted Reports regarding forensic audit of 15 TMs to SEBI.
JULY 2018	Investigation was completed by SEBI and accordingly, SCN was issued against OPG Securities and its Directors on July 3, 2018. Thereafter, a Supplementary SCN was issued by SEBI against the aforementioned entities on July 31, 2018 (“ Supplementary SCN ”).

1.3 The following Reports formed the basis for SEBI’s investigation and SCN/Supplementary SCN in the instant matter –

TABLE II – EXPERT COMMITTEE/FORENSIC AUDIT REPORTS		
	DATE	REPORT
1.	NOVEMBER 30, 2015	CFT REPORT – PRELIMINARY FINDINGS ON COMPLAINT PERTAINING TO CO-LOCATION AT NSE
2.	MARCH 2, 2016	TAC EXPERT COMMITTEE REPORT
3.	DECEMBER 2016	DELOITTE REPORT PROJECT BORSE – FORENSIC REVIEW OF CO-LOCATION FACILITY
4.	NOVEMBER 2017	INDIAN SCHOOL OF BUSINESS (“ ISB ”) REPORT – PROFITS EARNED BY CO-LOCATED TRADING MEMBERS FINAL REPORT
5.	MAY 2018	E&Y REPORT PROJECT KAIROS – CASH MARKET
6.	MAY 2018	E&Y REPORT PROJECT KAIROS – CURRENCY DERIVATIVES AND INTEREST RATE FUTURES
7.	JULY 2018	DELOITTE REPORT PROJECT REGLER – FIRST/EARLY CONNECT AND CONNECTION TO SECONDARY SERVER

1.4 OPG Securities is a TM of NSE, BSE Limited (“**BSE**”) and MSEI (erstwhile MCX-SX) in Cash, Futures and Options and Currency Derivatives segments. The details of Directors and Compliance Officers of OPG Securities are as under:

TABLE III – DIRECTORS AND COMPLIANCE OFFICERS OF OPG SECURITIES		
NAME	DESIGNATION	TENURE
SANJAY GUPTA (“ NOTICEE 2 ”)	DIRECTOR	2009 ONWARDS
SANGEETA GUPTA (“ NOTICEE 3 ”)	DIRECTOR	1.04.2010 ONWARDS
OM PRAKASH GUPTA (“ NOTICEE 4 ”)	DIRECTOR/ COMPLIANCE OFFICER	2009 ONWARDS
DHRUV GUPTA	DIRECTOR	1.04.2012 – 31.08.2016
GAURAV GUPTA	COMPLIANCE OFFICER	1.08.2007 ONWARDS

TABLE IV: OPG SECURITIES' REGISTRATION DETAILS – EXCHANGE/SEGMENT WISE		
NSE		
CASH MARKET	DERIVATIVES	CURRENCY
INB230921734	INF230921734	INE230921733
BSE		
CASH MARKET	DERIVATIVES	CURRENCY
INB010921733	INF010921733	EXCHANGE REGN.
MCX STOCK EXCHANGE LIMITED		
CASH MARKET	DERIVATIVES	DERIVATIVES
INB260921730	INF260921730	INE260921734

- 1.5 In addition to the aforementioned, Aman Kokrady (“**Noticee 5**”), an employee of OPG Securities, is a relative of Noticee 2 i.e. Sanjay Gupta. His primary role in the TM was to understand and write software for running the strategies (algorithms). Aman Kokrady had resigned from OPG Securities sometime during mid–2014 and at the time of issuance of SCN, was a Key Management Person with Acceletrade Technologies, a Company which had developed trading software exclusively for OPG Securities.
- 1.6 Based on the investigation conducted by SEBI and aided by the conclusions arrived at in the aforementioned Reports (mentioned at paragraph 1.3 of this Order), SCN dated July 3, 2018 read with Supplementary SCN dated July 31, 2018 was issued to the Noticees alleging that they had violated Sections 12A(a)–(c) of SEBI Act, 1992 (“**SEBI Act**”) read with Regulations 3(a)–(d) and Regulation 4(1) of SEBI (Prohibition of Fraudulent and Unfair Trade Practices Relating to Securities Market) Regulations 2003 (“**PFUTP Regulations 2003**”). Further, it is alleged that OPG Securities had violated Clauses A(1)–(5) of the Code of Conduct as specified in Schedule II of Regulation 9 of SEBI (Stock Brokers and Sub Brokers) Regulations, 1992 (“**Stock Brokers Regulations**”). It is also alleged that Sanjay Gupta had violated Section 11C(2) of the SEBI Act. The SCN also directed the Noticees to show cause why suitable directions under Sections 11(1), 11(2)(b), 11(4) and 11B of the SEBI Act should not be issued against them for the alleged violations of the aforesaid provisions of law. The allegations as contained in the SCN read with Supplementary SCN are discussed at paragraph 4 of this Order.
- 1.7 Subsequent to the issuance of SCN and Supplementary SCN, an opportunity of personal hearing was granted to the Noticees on various occasions and such dates along with details of appearances/responses are listed out hereunder:
- i. **January 25, 2019*** – Noticees 1–5 appeared for the hearing and were represented by Om Prakash Gupta (Director) and Dhruv Gupta who requested for time to file a reply to the SCN. Accordingly, the aforementioned Noticees were granted time till February 21, 2019 to file such reply. However, no reply was filed by the Noticees as on that date.

- ii.* **February 22, 2019** – Noticees 1–5 appeared for the hearing and were represented by Advocate Ravi Chandra Hegde, O. P. Gupta and Dhruv Gupta. The Noticees requested for time to file a reply to the SCN. They were granted time till February 25, 2019 to file such reply. Accordingly, the Noticees submitted a preliminary reply dated February 25, 2019 to SEBI.
- iii.* **February 26–28, 2019** – At their request, Noticees 1–5 were granted an opportunity by SEBI to cross–examine the Experts who authored the Reports relied upon by SEBI in the SCN read with Supplementary SCN. The Noticees appeared on the aforementioned dates for the cross–examination and were represented by Advocate Ravi Chandra Hegde, O. P. Gupta and Dhruv Gupta.
- iv.* **March 6, 2019** – Noticees 1–5 appeared for the hearing and were represented by Advocate Ravi Chandra Hegde, O. P. Gupta and Dhruv Gupta. They sought time till March 11, 2019 to file reply/additional written submissions in the matter. However, vide an e–mail dated March 11, 2019, the Noticees sought an extension of four days to file their additional written submissions, which was granted by SEBI. Thereafter, the Noticees submitted their additional written submissions vide letter dated March 15, 2019.

2. **NSE TCP/IP TBT SYSTEM ARCHITECTURE**

- 2.1 Algorithmic trading is a method of executing a large order using automated pre–programmed trading instructions, relying on complex mathematical formulas and high speed computers, accounting for variables such as time, price and volume to send small slices of the order out to the market over time. High Frequency Trade (“**HFT**”) is a type of algorithmic trading characterized by high speeds, high turnover rates, and high order–to–trade ratios that leverages high–frequency financial data and electronic trading tools. The key factors that drive HFT are highly sophisticated algorithms, instantaneous access to order books/trades, co–location and very short–term investment horizons.
- 2.2 NSE has two price feed streams – one is the limited depth Broadcast (UDP stream), which is available on VSAT network and leased line networks and the other is TBT, which reflects every change in the order book. Due to the large size of the price information, TBT is available in co–location. TBT information was earlier disseminated over TCP/IP wherein the information is delivered one–by–one. An alternative to TCP/IP was Multicast Protocol wherein TBT data is broadcasted to recipients at a common point using a broadcast address (like radio broadcasts wherein listeners tune into the frequency of the station).

- 2.3 Vide a Circular dated August 31, 2009, NSE informed its TMs that it was providing a *co-location facility* (a service offered by NSE to its TMs to locate their trading systems within its premises) for their Direct Market Access (“DMA”) and ALGO IT infrastructure in order to enable them to get faster access to information regarding price feeds and market movements thereby helping in swift execution of trades by TMs.
- 2.4 Further, vide a Circular dated December 3, 2009, NSE offered a new category of connectivity, viz. Category ‘T’ for market data TBT, which included all events resulting in changes in the order book such as order entry, modification, cancellation, trades, etc. A TM’s application for allocation of rack space for a particular market segment in the *co-location facility*, if approved by NSE, would result in such TM being allowed to place its Servers in the premises (data centre) of the Exchange. Such TM would be provided with a registration enablement e-mail/allotment letter containing log-in details, primary POP Server and Secondary POP Server IP addresses, Rack number, TBT IP address (see paragraph 3.13 of this Order).
- 2.5 NSE’s TBT data feed was disseminated to TMs only through the TCP/IP protocol until April 6, 2014 when the alternative of Multicast was introduced initially to replace the TCP feeds. Eventually, both systems were provided to TMs in parallel. Dates of TBT rollout in various market segments under TCP/IP and Multicast Protocol transmission (“MTBT”) is provided below.

TABLE V – TBT ROLLOUT DATES		
SEGMENT	TCP/IP TBT INTRODUCTION DATES	MTBT INTRODUCTION DATES
FUTURES & OPTIONS	June 1, 2010	April 7, 2014
CASH MARKET	July 2010	November 10, 2014
CURRENCY DERIVATIVES	March 16, 2011	April 7, 2014

- 2.6 The year-wise statistics of TMs availing of co-location, TBT IP and MTBT (page 12 of CFT Report) was as under:

TABLE VI						
NO. OF TMS AS ON	31.03.2010	31.03.2011	31.03.2012	31.03.2013	31.03.2014	31.03.2015
AVAILING CO-LOCATION FACILITY	25	80	79	95	98	115
HAVING TBT IP	NA	45	65	72	85	72
AVAILING MTBT FACILITY	NA	NA	NA	NA	NA	77
*NA: NOT APPLICABLE						

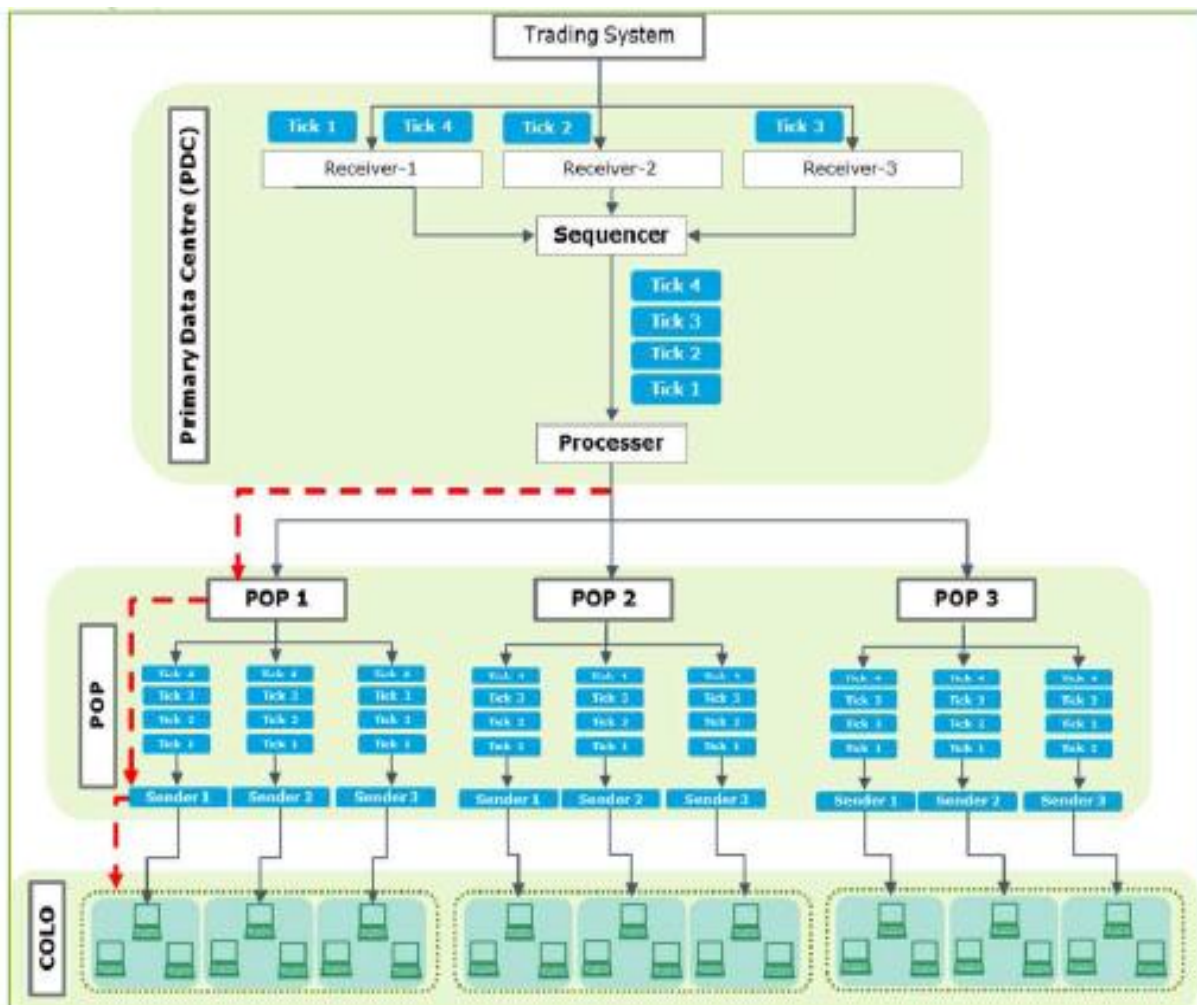
- 2.7 NSE co-location had commenced in 3 phases (with full allocation in Phase I and almost full allocation in Phase II and III) as under:

TABLE VII					
PARTICULARS	PHASE I F. Y. 2009–10	PHASE II F. Y. 2010–11		PHASE III F. Y. 2014–15	
	FULL	FULL	HALF	FULL	HALF
CAPACITY	49	53	68	11	82
ALLOCATED	49	52	64	9	73

3. **SALIENT FEATURES OF TBT ARCHITECTURE**

3.1 The TCP/IP based TBT Dissemination Server System (“*TCP/IP TBT System*”) architecture as understood from the Reports mentioned at paragraph 1.3 of this Order to the extent relevant for the purpose of adjudication of the issues in the instant proceedings, is explained as under.

3.2 In the *TCP/IP TBT System*, the data was disseminated by NSE through TBT mode where each ‘tick’ constitutes an information packet of any market event (new order, cancel order, modify order or trade) with a uniquely identified ‘tick sequence number’. Every ‘tick’ of a scrip/instrument i.e. any new order/modification/cancellation/trade will affect the order book of that scrip/instrument as multiple ‘ticks’ processed together form the state of the market book. A graphical representation of the TBT data dissemination system at NSE is placed below [*Refer pages 12 and 78 of the Deloitte Project Borse Report and as also confirmed by NSE to Deloitte vide e-mail dated October 26, 2016*]:



DATA FLOW – PDC TO POP SERVER:

- 3.3 Data flowed from the Communication Gateway to the Matching Engine (which matches data based on price–time priority), which in turn sent the data to the Trading System/Post Trade (“**PT**”). The PT disseminated order/trade data to the Primary Data Centre (“**PDC**”).
- 3.4 The PDC processed the data received from the PT and transmitted it to the Point of Presence Server (“**POP Server**”). The PDC had three components i.e. Receiver, Sequencer and Processor. The functions of these components are described hereunder.
- (i) **PDC Receiver** – Received the data from the PT and transmitted it to the Sequencer.
 - (ii) **PDC Sequencer** – Arranged the data from multiple PDC Receivers in sequence and transmitted it to the PDC Processor for further processing.
 - (iii) **PDC Processor** – Created TCP Server sockets and listened for any connection requests from the POP Servers. No authentication was performed before the POP Receiver’s connection request was accepted. The PDC Processor batched and compressed the data received from the PDC Sequencer.
 - (iv) Thereafter, the batched and compressed data received from the PDC Sequencer was disseminated to the POP Servers in the order of array/dissemination sequence for the day. An array is formed at the PDC based on the login time of the respective POP Server i.e. POP Server which logs in first to a PDC on a trading day will be ranked first and the other POP Servers second and third, etc. The data is sent in a sequence in which each POP Server would login on a given day. The order in the aforementioned array/dissemination sequence may change from day to day depending upon the log in sequence of the POP Servers.
 - (v) In its review of the *TCP/IP TBT System* architecture, E&Y have also confirmed the aforementioned at pages 23–24 of Project Kairos Report (Cash Market segment) and pages 24–25 of Project Kairos Report (Currency Derivatives and Interest Rate Futures segments).
 - (vi) The TAC Expert Committee Report has stated that every ‘tick’ is distributed by PDC to POP Servers in round–robin fashion where data is first sent to all Primary

POP Servers and thereafter to the Secondary POP Server (see page 10 of the TAC Report).

- (vii) The dissemination sequence to POP Receiver does not change even if a POP gets disconnected on that trading day and reconnects.

DATA FLOW – POP SERVER TO TM:

3.5 The POP Server is a disseminating server that had two components i.e. Receiver and Sender, which functioned in the following manner –

- (i) **POP Receiver** – Received the data from the PDC and sent it to the POP Sender.
- (ii) **POP Sender** – Transmitted the data received from the POP Receiver to the *co-location* TM connected to each Port of that POP Sender. There were three POP Sender processes (Ports) on each POP Server in the Futures and Options and Cash Market segments. The Currency Derivatives segment had only two POP Sender processes (Ports). Each POP Sender was assigned a list of *co-location* TMs who could connect to it. Each Port/POP Sender was configured with parameters such as – POP Server IP address, Port number to which a TM will connect and the TM's IP address, User ID, Password, organization and status active or disabled. Accordingly, those TMs whose IP address are mapped to a Port/POP Sender will be able to connect to that particular POP Sender.
- (iii) An array/dissemination sequence is also maintained by each Port (an array is formed at the Port based on the login time of each TM on such Port i.e. earliest login TM is ranked first with the next TMs being ranked second and third, etc.). The login time referred here is the order in which the TM connects to the POP Server. The data is sent in a sequence in which the *co-location* user/TMs were present in the array.
- (iv) E&Y have stated that the Ports of a POP Server would start in the sequence of Port 10980, 10981 and 10982 (pages 23–24 of Project Kairos Report Cash Market segment) and Port 10970 and 10971 (pages 24–25 of Project Kairos Report Currency Derivatives and Interest Rate Futures segment). However, the order of receipt of data at each Port was not defined by the source code.
- (v) On page 10 of the TAC Expert Committee Report, it has been stated that the Primary and Secondary POP Servers, in turn, deliver the 'tick' to all clients connected to such POP Servers in first-cum-first-serve fashion ("FCFS") and the

FCFS order is fixed by the order of login on the POP Server and stays fixed throughout the day. No Port level dissemination of data has been analysed in the aforementioned Report.

- (vi) In response to certain queries raised by SEBI vide an e-mail dated April 18, 2018, Deloitte (vide an e-mail dated May 3, 2018) stated that based on the source code analysis and the network diagram, the data from a POP Server will be disseminated first to Port 1, then to Port 2 and then to Port 3. However, as stated in the *Technical Document* (prepared by Deloitte on the basis of their understanding of the TBT source code and confirmed by NSE vide an e-mail dated October 26, 2016), there is no version or backup maintained for the configuration files. Also, there are no change requests for the modifications in the configuration files maintained. Hence, Deloitte have stated that it cannot be ascertained whether for the period of their review (2010–2015), data was first sent to Port 10980, 10981 and then to 10982. Deloitte have also confirmed that their analysis was limited to ascertaining whether the data was disseminated sequentially, broadcasted or multicast. The subsequent flow of data at Port level was not analyzed.
- (vii) NSE’s reply dated May 12, 2016 (to the findings of the CFT Report/TAC Expert Committee Report) states that *“a POP Server disseminated data to the Ports in a sequential manner but without waiting for a Port to in turn complete its dissemination to all the TMs IPs under it. Within a Port, the data is disseminated in the order of the TM’s login every day...”*
- (viii) The TM’s rank in the dissemination sequence in the Port does not change even if a TM gets disconnected on that trading day and reconnects.

3.6 The details of Primary POP Servers during the period 2009–2016 (forwarded to SEBI vide NSE’s e-mail dated May 24, 2018) are provided below –

TABLE VIII – PRIMARY POP SERVERS DETAILS			
SEGMENT	SERVER	PERIOD FOR WHICH SERVER WAS PRIMARY	SERVER IP
FUTURES & OPTIONS*	TBTLV8	14.06.2010 – 27.01.2012	–
	TBTCLV3	19.01.2011 – 01.02.2012	–
	TBTLV14	05.08.2011 – 02.02.2012	–
	TBTLV19	09.01.2012 – 23.01.2012	–
	TBTLV22	23.01.2012 – 30.01.2012	–
	TBTCOLO21	30.01.2012 – 02.12.2016	172.28.124.21
	TBTCOLO23	02.02.2012 – 01.04.2016	172.28.124.23
	TBTCOLO24	03.02.2012 – 01.04.2016	172.28.124.24
	TBTCOLO26	31.01.2012 – 01.04.2016	172.28.124.26

CASH MARKET*	TBTLV5	01.06.2010 – 30.01.2012	192.168.7.101
	TBTLV15	08.08.2011 – 01.01.2012	192.168.7.66
	TBTCOLO11	31.01.2012 – 02.12.2016	172.28.127.11
	TBTCOLO12	29.03.2012 – 24.08.2012	172.28.127.12
	TBTCOLO13	01.02.2012 – 01.04.2016	172.28.127.13
CURRENCY DERIVATIVES	TBTLV5	01.05.2011 – 01.01.2012	192.168.7.101
	TBTLV15	01.09.2011 – 01.01.2012	192.168.7.66
	TBTCOLO11	31.01.2012 – 02.12.2016	172.28.127.11
	TBTCOLO12	29.03.2012 – 24.08.2012	172.28.127.12
	TBTCOLO13	01.02.2012 – 01.04.2016	172.28.127.13

3.7 It is pertinent to note that the term Secondary POP Server is a nomenclature used for an additional/alternate/backup POP Server provided by NSE. Further, NSE vide its *Colocation Guidelines* dated August 8, 2011 (as revised on April 16, 2012) clearly stated that: “Members should always check the secondary TBT parameters are working fine with their application, in case of non-availability of data from TBT primary source they can move to secondary source.” However, the purpose of such Secondary POP Server connection was for handling exigencies at NSE/TMs’ end so that they do not suffer issues in case of primary POP Server failure.

3.8 The details of Secondary/backup POP Server during the period 2009–2016 (forwarded to SEBI vide NSE’s e-mail dated May 24, 2018) are provided below:

TABLE IX – SECONDARY POP SERVERS DETAILS			
SEGMENT	SERVER	PERIOD FOR WHICH SERVER WAS SECONDARY	SERVER IP
FUTURES & OPTIONS	TBTLV9	JUNE 2010–DECEMBER 2010*	–
	TBTLV17	OCTOBER 2011– JANUARY 2012	–
	TBTCOLO27	FEBRUARY 2012–DECEMBER 2016	172.28.124.27
*NO POP SERVER WAS DESIGNATED AS A SECONDARY SERVER BETWEEN JANUARY TO OCTOBER 2011			
CASH MARKET	TBTLV6	JUNE 2010– SEPTEMBER 2011	192.168.7.
	TBTLV18	OCTOBER 2011– JANUARY 2012	192.168.7.110
	TBTCOLO17	FEBRUARY 2012–DECEMBER 2016	172.28.127.17
CURRENCY DERIVATIVES	TBTLV6	MAY 2011–SEPTEMBER 2011	–
	TBTLV18	SEPTEMBER 2011–JANUARY 2012	–
	TBTCOLO17	FEBRUARY 2012–DECEMBER 2016	172.28.124.17

3.9 There were three POP Sender (Ports) on each POP Servers for the Futures and Options segment and Cash Market segment i.e. (i) Sender Port 1, (ii) Sender Port 2 and (iii) Sender Port 3, while the POP Servers for the Currency Derivatives segment had two POP Sender (Ports) i.e. (i) Sender Port 1 and (ii) Sender Port 2. The Sender Ports were identified by specific Port number i.e. for Futures and Options segment: Ports 10990, 10991 & 10992; for Cash Market segment: Ports 10980, 10981 & 10982; and for Currency Derivatives segment: Ports 10970 & 10971. TMs' TBT IPs were mapped to a specific Port assigned to them.

3.10 From page 7 of the NSE reply dated May 12, 2016, it is observed that: *“TMs desirous of receiving TBT data for their co-location Servers had the option of taking as many IPs for the purpose subject to the limit of 10% per co-location rack of the respective TM. ... Subsequently, NSE vide a Circular dated March 5, 2013, revised the number of maximum permissible IP connections to receive market data to 15 per rack and there was no limit of rack per TM. Thus, it was and continues to be open for any TM to avail as many IP connections as it might deem appropriate for its level of business.”* Further, from page 8 of the said reply, it is noted that *“the basis for allotting new IP connections for POP Servers to TMs was FCFS basis. Therefore, any TM who applied for an IP connection was simply accommodated on the next available POP Server...”*

3.11 In its Project Borse Report, Deloitte had also stated as under:

“We were given to understand that since 2011, each POP Server had three sender processes and based on advice from the Development team, it was recommended that each POP sender process be allocated a maximum of 30 IP connects to maintain latency and throughput i.e. 90 IPs per Server. New IPs taken by TMs would be allocated in sequential fashion – i.e. one Server at a time, distributing the IPs one to each POP sender process on the Server, and then moving on to the next Server. If a new Server was introduced, any new IPs taken after that would first be distributed sequentially along the POP sender processes of that Server till the load was equitable with the existing POP Servers. We understand that there was no documented process for allocation of TMs to POP Servers.”

3.12 As observed from page 32 of the E&Y Report – May 18, 2018, the process of TBT IP allocation was explained by NSE as under:

- i.* On request of a TM and on completion of commercial process and on receipt of payment from a TM, a TBT IP was assigned to a TM.
- ii.* A Port of a POP Server was prescribed a limit of 30 connections.
- iii.* For configuring a new TM TBT IP, the IT Operations Team would have to manually access the 'Vendor database' files sequentially (beginning with Port 10980 of Primary 1) and configure in the 'flat file' for the Port which has an availability.

Availability was decided based on the number of connections made on that Port on that trading day. Member TBT IP was given access on that Port that had less than 30 connections.

- iv. However, no backup was taken of actual configuration file across Ports and POPs across the review period.
- v. Each TBT IP was then configured on the same Port of the Secondary POP Server as well. A sequential methodology was followed for configuration of TBT IPs in respective POP Servers. The sequential process was a manual process to manage load balancing across various POP Servers.

3.13 From one of the registration enablement e-mails forwarded by NSE to OPG Securities on March 24, 2014 (see paragraph 2.4), it is observed that the said TM was *inter alia* provided with the following TBT details for co-location data centre such as –

- Rack number: F9,
- TBT IP address (TM IP address): 10.230.39.12,
- User ID and password along with relevant segment i.e. Cash Market and
- Information regarding POP Server and Port.

TABLE X – OPG SECURITIES' SAMPLE REGISTRATION DETAILS		
SERVER NAME	SERVER IP	PORT
TBT PRIMARY POP SERVER IP ADDRESS	172.28.124.17	10980
TBT SECONDARY POP SERVER IP ADDRESS	172.28.124.17	10980
TBT PRIMARY OFFLINE POP SERVER IP ADDRESS*	172.28.124.17	10980
TBT SECONDARY OFFLINE POP SERVER IP ADDRESS*	172.28.124.17	10980
*In the event of any disconnection, a TM may connect to these POP Servers for recovering lost data.		

3.14 **'Load balancer' and 'Randomizer'** – A *'Load balancer'* is a hardware/software that distributes network/ traffic load across a number of Servers based on specific algorithm like least connections, least response time, round robin etc. The relevance of a *'Load balancer'* arises from the fact that load was not evenly distributed across the Ports of primary POP Servers based on the number of connections made on each trading day. On the other hand, a *'Randomizer'* refers to a function which is Sender Port specific and which would randomly pick a connection to begin dissemination of data, rather than starting with the first connection each time. NSE developed a *'Randomizer'* in 2011 that was implemented only for Bucket POP Servers and was not replicated on normal TBT systems in respect of primary and Secondary/backup POP Servers. Bucket POP Servers were meant for TM who subscribed for data packet pertaining to a few securities (customized data) whereas PDC Servers were meant for TM who subscribed for the entire TBT data. As stated earlier, a TM who logged in first to the first Sender Port of a POP Server which has connected first to PDC on a trading day would be disseminated data ahead of other TMs in the same Port throughout the day. Since, in the *TCP/IP TBT System*, the nature of data disseminated

to all the TMs was the same, randomization in respect of primary and Secondary POP Servers would have ensured that even where one TM consistently logged in first in the Port of a POP Server which connected first to the PDC, there would be no guarantee that such TM would have been disseminated data first.

- 3.15 It is an admitted position that many TMs used multiple IPs to receive the TBT data. It is also important to acknowledge that not every TM TBT IP can be the first to login and connect to a POP Server or be the first to login and connect to the POP Server that logged in first to the PDC on a given day. I observe that NSE's *TCP/IP TBT System* had N+1 Servers i.e. N number of primary POP Servers + 1 Secondary/backup POP Server and the Secondary POP Server was always on active-active mode (running alongside primary POP Servers). Any TM connecting first to the Sender Port 1 of the POP Server (primary and Secondary), which in turn was first to connect to the PDC on a given day would be the first for dissemination. From the explanation provided by the Forensic Auditors regarding the *TCP/IP TBT System* architecture, I observe that the length of the queue i.e. number of connections to a particular Port would bring significant variability in terms of which Port would disseminate data faster. As observed by E&Y in its near production simulation of the *TCP/IP TBT System* architecture, during the course of the day, the Port with the shortest queue would have the ultimate advantage of disseminating data ahead of other Ports.
- 3.16 Additionally, it may also be noted that the Secondary POP Server on account of being a fail-safe/fall back POP Server whose purpose was to ensure continuity of data dissemination in the event of primary POP Server failure, would invariably be lesser loaded i.e. have lesser TMs logging in and getting connected to it. In such a scenario, even in the event of the Secondary POP Server having established a connection subsequent to any or all of the primary POP Servers to the PDC, there would still exist a probability that any TM connected through one of the Ports of such Secondary POP Server which connected later to the PDC would receive the data ahead of other TMs connected to the primary POP Servers which connected earlier to the PDC.
- 3.17 For example, if there are three POP Servers comprising of two primary POP Servers (say POP Server 1 and Pop Server 2) along with a backup/Secondary Server (say POP Server 3), where primary POP Server 2 (having Port A with 25 TM IPs connected i.e. A1 to A25, Port B with 25 TM IPs connected i.e. B1 to B25 and Port C with 25 TM IPs connected i.e. C1 to C25, where Port A is the first Port to connect to such POP Server) is the first to connect to PDC followed by primary POP Server 1 (having Port A with 15 TM IPs connected i.e. – A1 to A15, Port B with 15 TM IPs connected i.e. B1 to B15 and Port C with 15 TM IPs connected i.e. C1 to C15, where Port B is the first Port to connect to such POP Server) and Secondary POP Server 3 (having Port A with 5 TM IPs connected i.e. –

A1 to A5, Port B with 5 TM IPs connected i.e. B1 to B5 and Port C with 5 TM IPs connected i.e. C1 to C5, where Port C is the first Port to connect to such POP Server), it would be highly probable for the TM connecting to Port C having first connect to Secondary POP Server 3 to be disseminated data comparatively earlier than some of the TMs connected to Port A of primary POP Server 2 and Port B of primary POP Server 1 on account of (i) Port C of POP Server 3 being lesser loaded and (ii) since the *TCP/IP TBT System* serviced the receiver queues in parallel where each queue was built sequentially, one packet at a time. In other words, the data which was almost simultaneously disseminated at all Ports of Pop Server 2 will first have to be completely disseminated to all the TMs in Port A of POP Server 2 which had first connection to the PDC i.e. A1 to A25, before the next data packet is disseminated to all the TMs in the said Port whereas at the same time Port B connected to POP Server 1 (having second connect to PDC) and Port C connected POP Server 3 (having third connect to PDC), having lesser TMs connected will, although not disseminated data first, stand to receive the data comparatively earlier for the aforementioned reasons. Given the lesser density of connections at the Secondary POP Server, it may even so happen that a TM connected to Port B or A of POP Server 3 (Secondary POP Server) may receive data ahead of some TMs connected to POP 1 and POP 2. It can therefore, be safely concluded that in the absence of a 'Randomizer', the earliest TM to login to a Port would remain the first to be disseminated data packets amongst all the TMs queuing up in that Port throughout the day. Similarly, in the absence of a 'Load balancer', the length of queues in each Port could bring about significant variability in terms of earlier access to data packets.

- 3.18 **Unique Multi-leg Option Order (“UMLO”)** – UMLO is a type of order used to simultaneously buy and sell options with more than one strike price, expiration date or sensitivity to the underlying asset's price. As per NSE's e-mail dated February 26, 2016, the purpose of *Multi Leg Order Entry (“MLO”)* is entry of combination orders for contracts as a single order. It is also referred to as *2 Leg (“2L”)* or *3 Leg (“3L”)* order entry or combination order entry where the user can submit a combination of two contracts (2L) or three contracts (3L) with quantity and price specified for each contract as a single order. The contracts involved can be with the same or different underlying/expiry dates.

4. **SUMMARY OF CHARGES AGAINST THE NOTICEES**

- 4.1 Given the above background, the exact allegations levelled against the Noticees in the SCNs are summarised below –
- i. **First Connect/Early Login to POP Servers** – OPG Securities was alleged to have consistently logged in first across POP Servers as it was aware of the weakness of the

TCP/IP TBT System architecture and the advantage of having first login across various POP Servers in terms of trades. OPG Securities was also alleged to have designed its trading software in such a way that it could manage to connect first on the POP Servers and gain advantage.

- ii. **Crowding out other market participants** – OPG Securities was assigned multiple TBT IPs to single Ports of certain POP Servers which enabled it to consistently be 1st, 2nd, 3rd and even 4th connection to the POP Servers. Thus, it tried to crowd out other TMs from the TBT platform.
- iii. **Connection to Secondary/Fall-back Server for TBT data** – Since TMs were permitted to Secondary POP Server only in case of disconnections to primary POP Server, the load on Secondary POP Server was generally very low. Therefore, OPG Securities, by connecting to Secondary POP Server almost on a daily basis without valid reasons, gained unfair advantage over other TMs.
- iv. **Connivance/Collusion with NSE** – OPG Securities displayed disregard to the norms of NSE and yet NSE continued to permit OPG Securities to connect to the Secondary POP Server. The reluctance on the part of NSE to prevent OPG Securities from accessing the Secondary POP Server to gain unfair advantage could only have been possible through active connivance/collusion of NSE and OPG Securities.
- v. **Unlawful gains** – OPG Securities gained materially by being the first logger as well as by connecting to the Secondary POP Server.
- vi. **Conduct of OPG Securities and its Director, Sanjay Gupta, during SEBI Investigation** – OPG Securities acting through its Director, Sanjay Gupta, had concealed/destroyed vital information which could have been helpful in providing better insight and evidence in arriving at more conclusive findings in the instant proceedings.

5. **CONSIDERATION OF PRELIMINARY OBJECTIONS**

- 5.1 In their submission, the Noticees have submitted that when allegations have been made against OPG Securities regarding collusion with NSE officials, the statements of such officials ought to have been furnished to them by SEBI. Further, the Noticees have submitted that despite repeated requests to SEBI for records and documents made vide letters/e-mails dated July 20, 2018, September 21, 2018, October 3, 2018, October 9, 2018, December 9, 2018, January 14, 2019 and January 25, 2019, SEBI had ignored the same and had called upon them to file a reply in the matter. This allegation of the Noticee has been

carefully analysed by me and I note that all relevant and available documents as obtained by SEBI and which were relied upon in the SCNs or referred to in the Investigation Report, were either provided to the Noticees along with the said SCNs or thereafter, during the course of inspection of documents as requested by them. Hence, in my considered view, this allegation does not stand.

6. **PASUMARTHY REPORT – ADMISSIBILITY**

- 6.1 In their replies, the Noticees have also raised preliminary objections regarding infirmities in the Investigation carried out by SEBI and deficiencies in the TAC Expert Committee Report and Deloitte Reports, etc. as pointed out during the cross examinations conducted by their authorised representatives. Further, vide a letter dated December 20, 2018, the Noticees had submitted a Report prepared by Ramakrishna Pasumarthy, Associate Professor, IIT Madras, December 2018 (“**Pasumarthy Report**”). This Report seeks to repudiate *inter alia* SEBI’s findings alleging preferential access to OPG Securities. The contents of the said Report are discussed in the subsequent paragraphs of this Order. The Noticees while requesting SEBI to accept and rely on the Pasumarthy Report, have contended that the Investigation Report of SEBI heavily extracts the observations from various external Reports and takes them as ‘*admitted facts*’ and ‘*determined issues*’ by ‘*cherry picking*’ limited aspects to its own convenience. Even while doing so, the Investigation Report and the SCNs fail to notice the apparent contradictions in the findings recorded in the external Reports.
- 6.2 I have perused all the Reports relied upon by SEBI such as Deloitte Reports, E&Y Reports, TAC Expert Committee Report. I have also taken on record the alleged contradictions in the aforementioned Reports as brought out in Annexure A of the Noticees’ reply dated February 25, 2019.
- 6.3 I note that each Report relied upon by SEBI pertained to specific issues/concerns identified and raised therein.
- i.* For example, the scope of review of the Deloitte Reports and E&Y Reports though similar in respect of validation of specific concerns raised by SEBI, the conclusions arrived at therein were nonetheless for different market segments.
 - ii.* The Deloitte Project Borse Report of December 2016 had sought to address *inter alia* concerns such as whether the architecture of Co-location with respect to dissemination of TBT through TCP/IP was prone to manipulation/market abuse, whether preferential access was granted by NSE to TMs to primary and Secondary POP Servers, etc. (See pages 7 and 8 of the Report). Against the aforementioned, the Deloitte Project Regler Report of July 2018 sought to perform reviews of three

TMs in all market segments in relation to first connect and connecting to the Secondary POP Server and another five TMs regarding matters related to appointment of unauthorized service provider for taking point to point connectivity (see pages 8 and 9 of the Report).

- iii.* Similarly, in its Project Kairos Reports, E&Y had conducted forensic reviews of Cash Market (May 2018 Report) and Currency Derivatives and Interest Rate Futures (May 2018 Report) in respect of concerns such as whether the architecture of Co-location with respect to dissemination of TBT through TCP/IP was prone to manipulation/market abuse, whether preferential access was granted by NSE to TMs to primary and Secondary POP Servers, etc. (see pages 5 of the Reports).
- iv.* The objective of the ISB Report, which was a follow up study to the Deloitte Report, was to measure '*abnormal*' economic or financial profits that the seventeen TMs mentioned in the Deloitte Project Borse Report may have generated by logging in first to the PDC through either the primary or Secondary POP Servers (see page 4 of the Report).
- v.* The TAC Expert Committee Report sought to ascertain the merit in the allegations made in the three complaints of Ken Fong in particular to determine whether OPG Securities benefited from the loopholes from the TBT architecture and whether NSE had given differential or illegal access to any TM (see page 7 of the Report).

6.4 I note that the Deloitte Reports, E&Y Reports along with the TAC Expert Committee Report have brought out their understanding of the *TCP/IP TBT System* architecture based upon consultations with NSE officials. In this context, the following may be noted:

- i.* As stated earlier, vide an e-mail dated October 26, 2016, NSE had reviewed and approved the technical document prepared by Deloitte on the basis of their understanding of the TBT source code. The aforesaid technical document clearly confirmed the *TCP/IP TBT System* architecture which was adopted by Deloitte in its Reports. The ISB Report was a follow up to the Deloitte Report and therefore, adopted the aforementioned *TCP/IP TBT System* architecture as contained in the aforesaid Report.
- ii.* E&Y's approach for its Reports also included discussions with relevant NSE personnel (see page 6 of the Report).

- iii.* The TAC Expert Committee in its Report had also stated that the methodology adopted by it was based *inter alia* on a detailed presentation made by NSE on the *TCP/IP TBT System* architecture (see page 8 of the Report).
- 6.5 I have also noted the contents of the Pasumarthy Report (which have been reproduced as part of OPG Securities' reply dated March 15, 2019) as sought to be relied upon by the Noticees for substantiating their contentions in the instant proceedings. I note that the said Report is stated to have been prepared based on an analysis of data *inter alia* provided by OPG Securities including raw TBT data, source code of various modules of OPG Securities' trading software, detailed daily information of each OPG Securities trading server, etc. I am not inclined to accept the aforesaid Report as admissible evidence in this proceeding as the analysis has been done solely at the instance of the Noticee Company. I also note that the direct evidence relied upon by the Noticee Company (execution of three parallel trade orders in a sequence to the Exchange) is not relevant as the subject matter of adjudication relates to dissemination of TBT data from NSE to the TMs and did not pertain to execution of trade orders by such TMs upon receipt of said data.
- 6.6 As far as the findings of the Pasumarthy Report are concerned, I am of the view that the same cannot carry the same degree of credence as compared to the other Reports, which have been confirmed by NSE's IT team and have been prepared using the data and facilities provided and authenticated by NSE. I also note the limited purposes for which simulations were performed as well as the limitations in the circumstances appertaining to such exercises performed by Deloitte and E&Y. With respect to simulations performed by Deloitte in respect of dissemination of '*ticks*', Shri Jayant Saran in reply to Q59 of the cross examination stated that the same was only to confirm whether what was seen as part of the source code analysis was actually how the *TCP/IP TBT System* operated in practice and such simulation was performed offline and after trading hours with no TMs connected to the system. Further, Shri Jayant Saran in reply to Q57 and Q58 of the cross examination, had confirmed that the source code analysis and simulations output were shared with NSE IT for their confirmation but was nonetheless not included as an Annexure to the Reports. Likewise, in the E&Y Report (Project Kairos – May 18, 2018), it was stated that since logs pertaining to dissemination of '*ticks*' to respective TMs were not recorded by NSE during the review period due to which the order/sequence of ticks dissemination to various TMs as per the source code could not be identified, E&Y had to simulate the receipt at the TMs end as part of the simulation exercise. E&Y also qualified the simulation results by stating that the actual receipt in the live environment would have also been dependent on each TMs' technology infrastructure. In the same context, in reply to Q20 of his cross examination i.e. if a simulation was conducted in a controlled environment to arrive at a finding of probabilistic advantage, Professor Om Damani had stated that a controlled simulation given the nature of the *TCP/IP TBT System* architecture was not possible.

- 6.7 The Noticees have alleged '*cherry picking*' of limited aspects on the part of SEBI and incorporating them in the SCNs on the basis of various Expert Reports. I have applied my mind on the allegation to assess its veracity. First of all, I find that the said Reports have been furnished by SEBI to the Noticees in entirety and not in parts and hence, the Noticees have been given full opportunity to go through them and understand the minds of the Experts. Secondly, the Noticees were given an opportunity to cross examine the Experts to enable them to defend their case effectively. Thirdly, the Noticees were given sufficient time to make their oral/written submissions to rebut any of the Reports. Given this backdrop, even if we were to assume that SCNs were based on '*convenient*' findings, the quasi-judicial proceedings have afforded every opportunity to the Noticees to defend their case effectively and hence, I do not attach any importance to the allegation of '*cherry picking*'.
- 6.8 Upon an appreciation of all the above facts and limitations, I am of the view that the Pasumarthy Report cannot be brought on record as part of the instant proceedings.

7. **CONDUCT OF NOTICEES 1 AND 2 DURING SEBI INVESTIGATION**

- 7.1 In addition to the aforementioned, the conduct of OPG Securities acting through its Director, Sanjay Gupta, in the instant proceedings is also required to be noted. In this context, it is observed from the SCN that SEBI had vide an e-mail dated September 13, 2017, directed OPG Securities not to dispose of/delete or make modification, to any of the records, e-mails, communications, IT Logs, etc. However, as noted in the Deloitte Report, a factory reset was performed on Sanjay Gupta's phone immediately prior to handing it over for forensic imaging. I find that Sanjay Gupta has concealed/destroyed vital information which was necessary to carry out investigations in the instant proceedings and would have been helpful providing better insight and evidence in arriving at more conclusive findings in the matter. As a Director of OPG Securities, Sanjay Gupta was under an obligation to ensure that correct information was provided promptly to SEBI; however, he failed to ensure co-operation with SEBI and hampered investigations in the instant proceedings.

8. **ISSUES ON MERIT AND CONSIDERATION**

The investigation conducted by SEBI pertained to whether certain weaknesses/shortcomings in NSE's *TCP/IP TBT System* architecture led to the preferential treatment accorded to OPG Securities and whether this was with the active connivance of NSE and its officials resulting in unfair gains to the aforesaid TM. As stated at paragraph 1.6 of this Order, an SCN along with a Supplementary SCN were issued to the Noticees and the violations alleged therein

specifically against the Noticees are discussed on merit in the context of the *TCP/IP TBT System* architecture explained at paragraph 3 of this Order as under:

Issue 1: Whether OPG Securities consistently logged in first across POP Servers on account of being aware of the weakness of the TCP/IP TBT System architecture and thereby, gained an advantage?

Issue 2: Whether OPG Securities tried to crowd out other TMs from the TCP/IP TBT System platform?

Issue 3: Whether OPG Securities gained an unfair access and advantage by consistently logging into the Secondary POP Server for large number of days?

Issue 4: Unlawful gains made by OPG Securities.

8.1 **ISSUES 1 AND 2:** The allegation in the SCNs against the Noticee Company stems from an analysis of first connect data whereby it was observed that the aforesaid TM was logging in first across the Ports on the POP Servers. The SCNs alleged that OPG Securities was aware of the weakness of the *TCP/IP TBT System* and the advantages of having first access in terms of trade. The SCNs further alleged that preferential treatment given to OPG Securities by being first to login consistently for large number of days resulting in unfair access could not have been possible without the active connivance of NSE employees and the said TM. The *TCP/IP TBT System* weakness coupled with the laxity in supervision by NSE whereby basic checks and balances such as 'Load balancer' and 'Randomiser' were not installed, facilitated the unfair access and collusive practices. OPG Securities' consistent early login access day after day on select POP Servers was alleged to have been made possible only with active connivance of NSE officials with the aforesaid TM including its Directors and Aman Kokrady. Further, it was alleged that OPG Securities tried to exploit its knowledge of the *TCP/IP TBT System* by not only logging in first on select POP Servers but it even tried to crowd out others by occupying second and third positions on those Servers.

8.2 In their reply, the Noticees have stated that in addition to the factual submissions, they were providing *direct evidence* by way of an Expert Report (Pasumarthy Report) to show that OPG Securities was not a beneficiary of "early information" in any manner. For the reasons recorded at paragraphs 6.2–6.8 of this Order, the submissions of the Noticees in so far as they relate to *direct evidence* emanating from the Pasumarthy Report, have not been reproduced in the subsequent paragraphs of this Order while dealing with the determination of issues on merit.

8.3 **SUBMISSIONS MADE BY THE NOTICEES WITH RESPECT TO ISSUES 1 AND 2** – The Noticees have *inter alia* submitted as under:

- i. SEBI is yet to decide the critical issues namely (a) whether the NSE system had defects and failure in its system which was prone to manipulation; (b) whether this Noticee was aware of such defects

and took advantage of such defects; (c) whether NSE had given preferential treatment to the Noticee; and (d) whether there was a collusion between NSE and the Noticee because of which the Noticee gained advantage. It is after these allegations are established against NSE, only then the question of whether this Noticee gained any advantage would arise. These allegations against the Noticee cannot coexist when the main issues are yet to be decided by SEBI against the NSE.

- ii. *The SCN states that "... This FCFS order is fixed by the order of login on the POP Server and stays fixed throughout the day. Therefore, it is not absolutely critical to be the first one to login in the entire system. It is possible that someone who logs in 3rd on some POP Server gets the information before someone who logs in first on some other Server. However, as there were only five co-location POP Servers (including the so-called backup POP Server), there was advantage in being in first-N login (say 3 or 5) on any machine..." (Extracted from Expert Committee Report). The entire allegation is flawed and baseless and rather is a reckless statement made without any substance. At Page 9 of the E&Y Report, it is clearly mentioned that "a TM would need to be logged in first on all the nine Ports (across three POPs) to be disseminated all the ticks first on that trading day. There was no TM who logged in first on all nine Ports on any trading day." Such a finding has been ignored by SEBI and the Investigation Report without any reason given to the Noticee. Whether there was an alleged an advantage to OPG by logging in first on any POP Server, is something which has not been ascertained in the said report. Such finding is not similar to the finding of other expert. Moreover, when and how the Noticee got the first data and which POP Server provided the first data is not even discussed in any reports or the SCN.*
- iii. *The entire SCN is based on incorrect assumption of the TCP/IP TBT System architecture and is based on the premise that a TM who logs in early/ ahead of others in time to a POP Server and/ or a TM that logs in to lesser loaded/ Secondary POP Server would stand to take advantage. There has been no attempt to undertake any analysis of the above hypothetical statements. All the so-called experts such as Deloitte, E&Y and even TAC have either in their Reports or in the cross-examination proceedings made it amply clear that the login time to a TBT POP Server does not define the order of dissemination let alone the order of receipt of information by TMs. There is no correlation of time of TM log in to a TBT POP Server and receipt of information by TM. The multiple assumptions that need to be true for any such correlation to exist have been found to not hold by all the so called experts relied upon by SEBI. It is SEBI's own understanding that there existed 3 sender Ports on each POP Server and that a TM connects only to a Port. Therefore, there is no concept of first login to a server as seen from the Investigation Report, yet SEBI has not conducted any Port level analysis. The lack of such an analysis makes the limited and flawed studies conducted by SEBI and their findings that have been replicated in the SCN meaningless. Therefore, there is no evidence to suggest that time of login to a POP Server could afford any advantage.*

- iv. *The overall first login at NSE system would be the TM IP that connected first to Sender Port 1 (10990) of the TBT POP Server which connected first to PDC on that given day. The first connection in time to a TBT POP Server may not necessarily have been allocated/connected to Sender Port 1 (10990). Thus, under no circumstances, such a TM would be disseminated data first. The first TM to connect to Sender Port 1(10990) may have been overall 10th in time to login to that TBT POP Server but this TM would still be disseminated data ahead of others on that TBT POP Server. This has also been verified explicitly in responses to Q 124 of the cross-examination of Mr. Jayant Saran of Deloitte. Similarly, a TM may have established connection first in time to a POP Server that did not connect first to PDC on that given day, even if such a TM IP connected first to its Sender Port 1(10990), such a TM would not be disseminated data first in the system. Thus, any analysis based on login time to a TBT POP Server had no connection with the TM who would be disseminated the data first. This has also been verified explicitly in responses to Q 126 of the cross-examination of Mr. Jayant Saran of Deloitte. The entire SCN proceeds on merely the login time of TM of a TBT POP Server. The above clearly demonstrates that time of login to a POP Server cannot be any evidence to suggest that such a TM was disseminated data first/early let alone any evidence to suggest that such a TM received the data early/first.*
- v. *Just like there was no common definition across reports of 1st dissemination, there was no common understanding of who was disseminated data second, third and so on. SEBI and Deloitte in their reports not only wrongly assumed that first to establish connection in time was disseminated data first but also assumed that the TM who was second to establish connection in time was disseminated data second and so on. While SEBI and Deloitte observed that there existed a single connection which was disseminated data second, third etc. E&Y & ISB in their Reports suggested that multiple TMs were disseminated data simultaneously. E&Y even observed that approximately 40% ticks were disseminated first simultaneously to multiple TMs (at the same microsecond). The “absolute first” to be disseminated data on a TBT POP Server, would be the first to connect to its Sender Port 1 (10990). Now there could be two connections which might have been disseminated data second. These would be TM IP that connected second in time to its Sender Port 1(10990) and the TM IP that connected first in time to its Sender Port 2 (10991). The TM IP that connected second in time to a TBT POP Server may not necessarily have been allocated/connect to Sender Port 1(10090) and/or Sender Port 2 (10991). Under those circumstances such a connection will never be disseminated data second and there will be multiple TMs who will always be disseminated data ahead of such a TM connection. Here again SEBI and Deloitte failed to distinguish between time of connection to a server and rank on various Ports. NSE did not have a concept of 2nd, 3rd etc. Hence, to crowd out a TBT POP Server even theoretically, a TM should have been connected on the 1st, 2nd and 3rd position on each of the 3 Ports of that TBT POP Server. Similarly to crowd out at NSE level, the TM should have been first three ranked on all the Ports of each of the TBT POP Servers.*

- vi. SEBI TAC appointed Expert Committee also confirms that there is no well-defined definition of the 2nd, 3rd and so on logger at NSE i.e. TAC claims that either/ both the TM logging in second to Server 1 and TM logging in first to Server 2 will be in the race to be called 2nd login. Similarly, either/all the TM logging in third to Server 1 and TM logging in second to Server 2 and TM logging in first to Server 3 will be in the race to be called 3rd login. TAC therefore records that someone who logs in third on some server may get the information before someone who logs in first on some other server. The non-application of mind by SEBI is made evident from the fact that even when its own Experts claim that there is no way to define 2nd, 3rd login and so on logins then how could a TM be alleged to be 2nd, 3rd login and so on login and hence crowd out others.
- vii. The entire SCN is based on incorrect assumption of NSE infrastructure. Be that as it may, if for the sake of argument, one were to accept all assumptions and allegations in the SCN, the allegation of manipulation at NSE colocation is inherently based on the assumption that with “other things being equal”, TM that on average log-ins first/early to a TBT POP Server and/or a TM that connects to lesser loaded server/ secondary TBT POP Server then:
- Such TM is disseminated data early and;
 - that the said data is received early and;
 - that the said TM is able to act on it early and send out orders ahead of others
 - that such orders get traded ahead of others and
 - Hence, such a TM takes advantage of the system. An underlying assumption in this understanding is that due to variability (jitter and delays) impacting everyone, the effect of variability will cancel out.
- viii. It is a well admitted fact that there was no restriction to the time of login to a POP Server by NSE. Members were free to use automated scripts to connect to NSE POP Servers and that many TMs used automated login scripts to connect to NSE servers. Please refer to Q 68 to 72 of cross-examination of Jayant Saran.
- OPG was allocated only 5% of market wide TBT IP connections.
 - ‘FO_ALL_CONNECTS’ data provided by SEBI along with letter dated 19th December 2018 clearly shows that OPG established nearly 7% of all Futures and Options connections (15760 connections of 230575 connections)
 - Despite having close to 45 TBT IPs, OPG was never allocated IPs across all the Ports of all the TBT POP Servers.
 - OPG was not allocated Port 10990 on 3 out of 4 primary TBT POP Servers. Furthermore, on the Secondary TBT POP Server, OPG was allocated least number of IPs on Port 10990 as compared to other Ports.

FINDINGS IN RESPECT OF ISSUES 1 & 2

- 8.4 I note that the allegation against OPG Securities of having gained an unfair advantage on account of *'first connect/early login'* to the POP Servers ought to be tested against the understanding of the *TCP/IP TBT System* architecture as brought out at paragraph 3 of this Order. From the aforementioned paragraph, it is noted that the dissemination of data from PDC to POP Servers was sent in a sequence in which the POP Servers were present in the array, each array being defined on the order of login time of the respective POP Server. It is also noted that the order of disseminating data from the PDC to POP Server was not fixed for every day due to a change in the array/dissemination sequence i.e. rank based on the login time of the POP Server. Thereafter, the data was disseminated from POP Servers to TMs connected to Port(s) of such POP Servers in a sequence in which the co-location user/TMs were present in the array formed at each Port. As confirmed by NSE vide its reply to SEBI dated May 12, 2016 and its e-mail dated October 21, 2016 to Deloitte, data disseminated will first be sent to Port 1, Port 2 and then to Port 3.
- 8.5 In their statements before the Investigating Authority–SEBI dated July 6, 2017 and August 10, 2017 (Annexures 9 and 10 of the SCN) respectively, Sanjay Gupta and Aman Kokrady stated that they had not received any information from NSE officials on start-up time of NSE Server daily/routinely. However, it is noted from an e-mail dated May 30, 2015 from *'aman.kokrady@acceletrade.com'* to Nagendra Kumar from NSE having *'sanjay@opgsecurities.com'* and *'vikas@opgsecurities.com'* in CC, which states that *"Early Login – We have at certain times seen benefit by logging in early – need to understand if early login is indeed important"*. It is also noted from the statement of Sanjay Gupta and Aman Kokrady before the Investigating Authority–SEBI dated April 4, 2018 that in their explanation regarding the aforementioned e-mail dated May 30, 2015, they had stated that *"Based on very rudimentary off hand traders statements, we might have observed that at certain times the Servers (TM's TBT IP) which had most like an earlier interactive login time (pre start of the market) seems to have performed better versus most likely the cases where the Server (TM's TBT IP) logged in to interactive post start of market due to some failure in the workflow or our process."*
- 8.6 Details regarding distribution of TBT IPs in the Futures and Options segment (post February 2012) for OPG Securities (as analysed in the SCN) was as under:

TABLE XI – TBT IPs DISTRIBUTION DETAILS IN F&O SEGMENT					
	TBTCOLO21	TBTCOLO23	TBTCOLO24	TBTCOLO26	TOTAL
NUMBER OF IPs MAPPED TO PRIMARY POP SERVERS	10	10	18	7	45

8.7 From the SCN, it is also noted that distribution of TBT IPs in the Futures and Options segment (post February 2012) for OPG Securities (as analysed in the SCN) was as under:

TABLE XII – TBT IPs DISTRIBUTION DETAILS IN F&O SEGMENT													
NUMBER OF IPs MAPPED TO PRIMARY POP SERVERS	TBTCOLO21			TBTCOLO23			TBTCOLO24			TBTCOLO26			TOTAL
	10990	10991	10992	10990	10991	10992	10990	10991	10992	10990	10991	10992	
2012	0	0	8	0	4	0	0	6	0	6	0	0	45*
2013	0	0	8	0	7	0	0	8	4	4	1	1	
2014	1	1	8	0	6	0	0	7	5	3	1	1	
2015	–	–	–	–	2	–	–	–	2	–	–	2	
*Where a TM was allocated Port 1 on the primary POP Server, such TM would also be allocated Port 1 on the Secondary POP Server (see paragraph 3.13 of this Order). Likewise, such allocation will follow in respect of Port 2 and Port 3 of the POP Server i.e. where a TM is allocated Port 2 on the primary POP Server, it will also be allocated Port 2 on the Secondary POP Server. The total of TBT IPs allocated to OPG Securities i.e. 45, has been arrived at without taking into account new allocations of TBT IP per year and also the surrender by OPG Securities of such TBT IPs.													

8.8 An analysis of data of *first to connect* onto the POP Servers in Futures and Options segment (as contained in the SCN) revealed that OPG Securities had allegedly established first login/connect for the number of days as tabulated below –

TABLE XIII – F&O SEGMENT						
YEAR	TRADING DAYS (EXCLUDING MOCK TRADING DAYS)	TBTCOLO21	TBTCOLO23	TBTCOLO24	TBTCOLO26	TBTCOLO27 SECONDARY POP SERVER
2012	251	83	181	33	221	58
2013	250	81	242	16	248	243
1.01.2014 – 6.04.2014	66	31	52	9	66	65
7.04.2014 – 31.12.2014	178	17	30	3	39	37
2015	248	3	0	5	2	16

- i. 87.25% of the number of trading days during the year 2012 on TBTCOLO26.
- ii. 96.80% of the number of trading days on TBTCOLO23, 99.20% on TBTCOLO26 and 97.2% on TBTCOLO27 during the year 2013.
- iii. From January 1, 2014 to April 6, 2014 (i.e. prior to introduction of MTBT), OPG Securities managed to login first 100% of number of trading days on TBTCOLO 26, 98% of number of trading days on TBTCOLO 27 (backup server).

8.9 Details regarding days when POP Server was first to connect to PDC (as analysed by SEBI from the data provided by NSE) is produced below –

TABLE XIV – F&O SEGMENT						
YEAR	NO. OF DAYS WHEN POP SERVER WAS 1 ST TO CONNECT TO PDC	TBTCOLO21	TBTCOLO23	TBTCOLO24	TBTCOLO26	TBTCOLO27
2012		139	32	21	14	13
2013		84	36	29	38	58
1.01.2014 to 6.04.2014		8	14	11	14	18
*POP to PDC connection data was not available for 6 days in 2012, 4 days in 2013 and 1 day in 2014.						

8.10 The expression '*first connect/early login*' as made out in the SCN had reference to the following two levels i.e. (i) number of first connects on any of the POP Servers and (ii) number of first connects on the POP Server which had connected first to the PDC. However, upon a consideration of the information at paragraphs 8.6–8.9 in light of the *TCP/IP TBT System* architecture, it is understood that in the instant proceedings for determining the allegation of gaining unfair advantage by OPG Securities on account of '*first connect/early login*', it must first be ascertained whether or not the Noticee Company was allocated Port 1 i.e. 10990, on all or some POP Servers. Therefore, depending on the analysis of the first connection to the PDC established by the POP Server(s) where OPG Securities was allocated Port 1 (i.e. first Port of POP Server which connected first to PDC), the allegation of gaining unfair advantage by OPG Securities on account of '*first connect/early login*' will stand established.

8.11 While it is possible to ascertain/identify the POP Server that logs in first to the PDC and the Sender Port of that POP Server which receives the data first, at the starting point of the trading day, the subsequent changes in dissemination sequence between the Ports or between the POP Servers cannot be ascertained. This is because of the variance in the load factor at various Ports of different POP Servers. In other words, the data correlating the early login/first connect at each Port level to its corresponding load factor does not exist for the relevant period which prevents an actual determination of the TM who would have actually derived advantage. Thus, in my understanding, the information advantage accruing to the '*first connect*' TM may not continue throughout the day and depending upon the load factor in front of each Port, it may get diffused and diluted in the course of the trading day to a '*probabilistic*' advantage.

TABLE XV – F&O SEGMENT: NO. OF INSTANCES WHEN OPG SECURITIES ESTABLISHED 1 ST CONNECT.* PERIOD: FEBRUARY 2012 TO APRIL 6, 2014 – TOTAL TRADING DAYS 528.		
1.	TBTCOLO26	65
2.	TBTCOLO27 [SECONDARY POP SERVER]	72
TOTAL		137
*1 ST CONNECT ESTABLISHED THROUGH PORT 10990 OF A POP SERVER, WHICH WAS 1 ST TO CONNECT TO THE PDC ON THE DAY. SOURCE: ANALYSIS OF DATA PROVIDED BY NSE.		

- 8.12 As noted from the aforementioned Table XII (paragraph 8.7 of page 26) and Table XV, OPG Securities was allocated Port 1 on primary POP Server TBTColo26, which in turn connected first on a total of 65 days out of 528 trading days when such POP Server was active (OPG Securities was allocated Port 1 on TBTColo21 w.e.f. March 7, 2014 – Since MTBT was introduced in April 2014, the effect of the aforementioned allocation has not been considered). As stated at Table XII, where a TM was allocated Port 1 on the primary POP Server, such TM shall also be allocated Port 1 on the Secondary POP Server. Accordingly, OPG Securities connected first on Secondary POP Server TBTColo27 a total of 72 days out of 528 trading days when such POP Server was active. Therefore, the total number of first connects by OPG Securities was 137 days out of 528 trading days during the period February 2012 – April 6, 2014.
- 8.13 I note that the TCP/IP TBT system clearly provided for quicker data dissemination to a TM who had logged in early and such advantage would also result in the said TM getting data ahead of other TMs throughout the day. Further, OPG Securities had admittedly deployed a fully automated system called '*Automated Build, Deploy, Management and Monitoring System*' ("**ABDMMS**") post February 2012, which enabled it to connect first on the POP Servers. As admitted by OPG Securities in their reply in the context of their submissions regarding Secondary POP Server connection, even a micro second of no connection could result in a stale market book. While I am inclined to believe that such TM would have been aware of the inherent characteristics in *TCP/IP TBT System* and consequently, gained a '*probabilistic*' advantage on account of early logging in to such POP Server, I nonetheless cannot find myself in agreement with the allegation of '*first connect/early login*' resulting in unfair advantage to OPG Securities as made out in the SCNs since other TMs who were allocated to Port 1 of any POP Server would also gain an advantage over OPG Securities and other TMs. As stated in paragraph 8.12, the total number of first connects established by OPG Securities boils down to only 137 days out of 528 trading days during the relevant period. Further, for the reasons mentioned at paragraph 8.11, the first connect position may not remain static throughout the day and may get diffused and diluted due to varying load factor in each Port. Hence, in my view, the allegation that OPG Securities consistently logged in first to gain preferential access to TBT data feed through POP Servers does not stand proved.
- 8.14 I note that the SCN alleges that OPG Securities was allowed to '*crowd out*' POP Servers by NSE through allocation of multiple IPs to single Ports thereby enabling it to have the ability to establish 1st, 2nd, 3rd and even 4th connect to the POP Servers and as a result, gained unfair advantage over other TMs. The aforementioned allegation as contained in the SCNs is based on the observations of the TAC Expert Committee Report which had observed that: "*OPG Securities tried to exploit the loophole in TBT architecture by not only logging in*

1st on select (POP) Servers but it even tried to crowd out others by occupying 2nd, and 3rd positions on those (POP) Servers. ...” and the analysis of 1st, 2nd, 3rd, 4th connect made by OPG Securities on all primary POP Servers and Secondary POP Server as reproduced at paragraph 65 of the SCN dated July 3, 2018.

- 8.15 As mentioned earlier, data disseminated will first be sent to Port 1, Port 2 and then to Port 3 of the POP Server. OPG Securities was allocated Port 1 on only one primary POP Server (TBTColo26) and the Secondary POP Server (TBTColo27), which indicated that it had gained a limited advantage of early login (as has also been made out in the preceding paragraphs). The allegation contained in the SCN that assigning multiple IPs of OPG Securities to single Ports by NSE allowed ‘crowding out’ by the said TM has been arrived at after considering the analysis of 1st, 2nd, 3rd, 4th connect made by OPG Securities on any Port of a POP Server. In this regard, it is stated that such 1st, 2nd, 3rd, 4th connect` to the Ports other than Port 1 of the POP Server, while possible as per login time, will nonetheless stand relatively on a lower rank vis-a-vis the array/dissemination sequence formed on that POP Server since data dissemination occurs first to Port 1 of the POP Server. Incidentally, I note that a similar process of allocating multiple IPs of a TM on a single Port was also followed by NSE in respect of other TMs (as noted from Annexure 24(a) of the Deloitte Report). In view of the aforementioned, I do not find merit in the allegation of ‘crowding out’ as made out in the SCN against OPG Securities.

Issue 3: Whether OPG Securities gained an unfair access and advantage by consistently logging into the Secondary POP Server for large number of days?

- 8.16 The SCN *inter alia* alleges that by connecting to the Secondary POP Server almost on a daily basis without valid reasons, OPG Securities gained an unfair advantage over other TMs.

SUBMISSIONS MADE BY THE NOTICEES

- 8.17 The Noticees have *inter alia* submitted as under:

- i. There was no bar on connecting to any Server (primary or Secondary). NSE’s reply dated March 29, 2016–paragraph 57–Though called the backup server, it was always in active–active mode and TMs were free to connect Every TM retains the discretion to connect to either only the primary POP Servers or both the primary and back–up Server based on its own considerations. NSE’s reply dated May 12, 2016–paragraph 58–NSE explained that TMs have autonomous access to both the servers and that they are free to apply their discretion in connecting to either/ both the servers. Standing Committee on Technology Report dated May 11, 2016 (annexed to NSE’s reply dated November 14, 2017) – Members may also use (extra server) as an additional connection to get ticks on their server (it may be noted that this extra server is available to all for every IP address*

and there can be large number of connections on this server compared to the primary dissemination servers – in this sense, it is more appropriate for the traders to use it only when the primary POP Server has failed for some reason). NSE’s reply dated April 17, 2015 – “... It is important to note that backup servers have always been available to all TMs at all times as a part of Business Continuity Plan. All TMs have been advised to stay connected to both main and backup server so as they do not suffer issues in case of one server fail.”

- ii. The E&Y Report came to a specific finding that there were 53 TMs who accessed Secondary POP Servers and were reprimanded by NSE. Several TMs were not reprimanded despite having accessed Secondary POP Servers. Several TMs continued to access Secondary POP Servers despite being reprimanded. However, SCNs are issued without following the principle of parity and OPG has been singled out in the entire colocation episode. Based on these facts, the E&Y Report recorded an observation that “it appears that all TMs may have been granted access to Secondary POP Server equitably”. The Report which is relied upon by SEBI also shows that the Noticee was not even amongst the top 10 TMs who accessed secondary continuously during the relevant period.*
- iii. The NSE’s Colocation Guidelines dated August 8, 2011 – which were received by the Noticee on April 16, 2012 contains no whiff of any disciplinary action that may be initiated against TMs for not availing of the guidelines provided for accessing the NSE’s Colo.*
- iv. In any event, the absence of a regulatory sphere in relation to the colocation facility is evident from the submissions of NSE as recorded in the CFT Report which is furnished to the Noticee by SEBI, the relevant portion of which states “NSE was asked to provide details of the Guideline Handbook to which NSE stated that the Guideline Handbook is in the nature of processes and procedures communicated to TMs to ensure discipline in use of infrastructure security, controlled access, formats to be used, escalation matrix, etc. There is no penalty jurisdiction in this context. NSE also stated that it does not have regulatory jurisdiction in this matter.” Even if we assume that NSE Colocation Guidelines were indeed the rule of the land governing the connections to Secondary POP Server, NSE did not have any policy or any rule book usage of same. Thus, in hindsight, to allege that the Noticee should have adhered to the so called ‘Guideline’ is completely illogical, arbitrary and unfair. The same has been highlighted by both E&Y and Deloitte in their Reports that NSE did not have any well-defined documented policies and procedures.*
- v. SEBI has failed to appreciate that the unfettered access to the Secondary POP Server granted by NSE to all TMs had resulted in such TMs along with the Noticee frequently accessing the Secondary POP Server; however, only the Noticee has been penalised by NSE. Further, there is no explanation given as to why NSE has chosen not to take action against several TMs who despite being warned by NSE still continued to make connections to the Secondary POP Server. The Noticee has substantiated the submissions through a comparative analysis of connections by TMs in the F&O Segment, Cash Segment and Currency Derivatives Segment to the Secondary POP*

Servers. The Noticee has submitted that it can be established that no preferential access was granted to it to the disadvantage of other TMs in all the aforementioned Segments.

- vi. The Noticee had faced over 3500 disconnections from the NSE's primary POP Servers between December 2012 to May 2014 i.e. approximately 98 disconnections per day. The array of complaints made vide e-mails and phone calls during 2012–2014 provides sufficient justification for connecting to the Secondary POP Server. Further, the Noticee had brought to NSE's notice the issues of random disconnections, invariable latency and even receipt of incorrect data through the following complaints and has also referred to an e-mail dated September 11, 2014 where NSE itself accepted that TCP/IP TBT structure was facing issues as compared to Multicast TBT.*

	Date of complaint to NSE	Issues faced while connecting to TBT primary POP Server
1.	January 11, 2012	Noticee addressed an e-mail to the colo support team of the NSE complaining of experiencing a major dip in performance as the ports to which it was connected were changed by NSE. After seeking explanations with regards to the same and satisfying themselves of it, the colo team responded vide e-mail dated January 12, 2012 and allowed the Noticee to stay connected to the new and old primary POP Servers (Colo 24 and 26) as a business contingency.
2.	August 4, 2011	Noticee complained of facing issues pertaining to high latency and round trip delays.
3.	September 23, 2011	Noticee complained of irregularity in NSE's system and illustrated the loss suffered by the Noticee thereby during the month of September 2011.
4.	January 11, 2012	Issues with movement of TBT IP was signified by the Noticee.
5.	January 18, 2012	Following the advice given by the Colo support (in their e-mail dated January 12, 2012), vide another e-mail dated January 18, 2012, the Noticee requested the colo support to redistribute its 20 TBT IPs across all/as many servers of the exchange so that the business risk is minimised and the dependency on a single/two servers is reduced.
6.	January 30, 2012	Issue of multiple disconnections from the primary POP Server during live market hours were brought to NSE's notice.
7.	February 8, 2012	Noticee complained of issues faced with 2 leg orders.
8.	March 18, 2013	NSE informed the Noticees of problems prevailing with the servers.
9.	September 2, 2013	UDP configuration parameters that created broadcast issues was reported.
10.	September 27, 2013	Details of errors being experienced due to issues with technical environment of NSE.
11.	October 17, 2013	Noticee elaborately explains the disconnection issues to NSE.
12.	November 8, 2013	Noticee informed NSE that the solution recommended by it does not resolve the issues.
13.	November 11, 2013 and November 22, 2013	Details of errors being experienced by due to issues with technical environment of NSE.
14.	January 2, 2014	Noticee informs NSE that the constant data loss and disconnections were causing sever trade losses. In reply, NSE informs the Noticee of the problems prevailing with the primary POP Servers.
15.	January 3, 2014	On restarting the connection with NSE's servers, all backlog ticks were received in bulk at once.
16.	August 20, 2014	Noticee reported issues with TBT packet settings.
17.	September 10, 2014	NSE in its e-mail acknowledges the presence of glitches in TBT–TCP IP architecture as against the TBT–Multicast architecture.
18.	January 7, 2015	Disconnections in the interactive host of the Futures and Options segment reported.
19.	January 16, 2016	Disconnections in Futures and Options segment reported.
20.	January 29, 2016	Disconnections in the interactive host of the Futures and Options (direct connections) segment reported.
21.	April 9, 2016	Disconnections from the interactive adapter on the Noticee's CTCL 30423 reported.
22.	September 27, 2016	Disconnections in the interactive host of the Futures and Options segment reported.
23.	September 29, 2016	Loss of date in the cash market stream reported.

FINDINGS

8.18 From the number of connections/ load on Secondary POP Server, it may be observed that the average number of IPs connected to such Server was very low. As Secondary POP Server was always active and running without any time lag (as was the case for normal POPs), any TM connecting to such Server on a regular basis would have advantage over TMs logged in normal POP Servers on account of lesser load. An analysis of the server-wise load for the period 2012–14 for the Futures and Options segment (as contained in the SCN) is provided below –

TABLE XVI – SERVER-WISE LOAD FOR THE PERIOD 2012–14 FOR FUTURES AND OPTIONS SEGMENT							
SERVER	YEAR	2012		2013		2014	
	PORT	TOTAL NO OF IPs CONNECTED	AVERAGE IPs PER DAY	TOTAL NO OF IPs CONNECTED	AVERAGE IPs PER DAY	TOTAL NO OF IPs CONNECTED	AVERAGE IPs PER DAY
TBTCOLO21	10990	4830	19	5066	20	4822	20
	10991	2693	11	3211	13	3801	16
	10992	4423	18	5292	21	3910	16
	10999*	293	1	41	0	354	1
TBTCOLO23	10990	5019	20	3604	14	3504	14
	10991	4654	19	4730	19	4512	18
	10992	4626	18	4012	16	4043	17
TBTCOLO24	10990	4706	19	6023	24	5287	22
	10991	3918	16	4637	19	4290	18
	10992	5262	21	5280	21	4940	20
TBTCOLO26	10990	3788	15	3303	13	4230	17
	10991	3645	15	3204	13	4334	18
	10992	3796	15	4730	19	4296	18
	10999*	0	0	24	0	240	1
TBTCOLO27 [SECONDARY POP SERVER]	Data not available	561	2				
	10990	519	2	966	4	1602	7
	10991	288	1	1217	5	1221	5
	10992	377	2	1371	5	943	4

*For some period, there was an additional Port. **Source:** Based on data provided by NSE, vide e-mail dated May 29, 2018 w.r.t. Futures and Options all connects.

8.19 Year-wise analysis of Secondary POP Server connections of OPG Securities in Futures and Options segment (as contained in the SCN) revealed that the said TM had logged onto the Secondary POP Server as under:

TABLE XVII – OPG SECURITIES' YEAR-WISE SECONDARY POP SERVER CONNECTIONS IN F&O SEGMENT					
CALENDAR YEAR	TRADING DAYS	NO. OF DAYS CONNECTED	COUNT OF NO. OF IPS CONNECTED	AVERAGE NO. OF IPS PER DAY	%
2012	251	79	163	2	31%
2013	250	248	523	2	99%
2014	244	233	585	3	95%
2015	248	94	132	1	38%

- i.* 31% of number of trading days in the Calendar Year 2012.
- ii.* 99% of number of trading days in the Calendar Year 2013.
- iii.* 95% of number of trading days in the Calendar Year 2014.
- iv.* 38% of number of trading days in the Calendar Year 2015.

8.20 Vide an e-mail dated June 20, 2018, Deloitte had observed that on significant number of days, OPG Securities TBT IP had only connected to the Secondary POP Server and not the primary POP Server, details of which are provided as under:

TABLE XVIII – OPG SECURITIES' SECONDARY POP SERVER CONNECTIONS IN F&O SEGMENT			
YEAR	COUNT OF IPS	NO OF DAYS	AVERAGE NO OF IPS PER DAY
2011	16	9	2
2012	110	63	2
2013	518	248	2
2014	559	232	2
2015	130	92	1

8.21 I note that NSE's Colocation Guidelines dated August 8, 2011 (as revised on April 16, 2012), allowed TMs to move to Secondary POP Server in the event of non-availability of data from TBT primary POP Server. Having regard to the aforementioned and in view of Table XVI, it is observed that the load on the Secondary POP Server was generally very low.

8.22 As noted from the SCNs, NSE had issued several warnings/advisories to OPG Securities during the period February 2012–June 2012, which are elucidated below:

TABLE XIX – DETAILS OF WARNINGS/ADVISORIES ISSUED BY NSE TO OPG SECURITIES

DATE OF WARNING/ ADVISORY	DATE ON WHICH TM CONNECTED TO SECONDARY POP SERVER WITHOUT APPROPRIATE REASON OR PRIOR APPROVAL FROM THE EXCHANGE	SEGMENT FOR WHICH ADVISORY ISSUED
10.02.2012	10.02.2012	Futures and Options
14.02.2012	14.02.2012	Futures and Options
21.02.2012	21.02.2012	Futures and Options
15.03.2012	15.03.2012	Futures and Options
04.05.2012	04.05.2012	Cash Market
18.05.2012	18.05.2012	Futures and Options & Cash Market
07.06.2012	07.06.2012	Cash Market

- i. NSE’s e-mails dated February 10, 2012; February 14, 2012; February 21, 2012; March 15, 2012 and May 4, 2012 had advised OPG Securities to shift back to the primary POP Servers.
- ii. In addition to the above, NSE’s Colo Support Team sent an e-mail dated June 7, 2012 to the Noticee Company advising it to connect to the primary POP Server stating “... it has been observed that in spite of informing you several times still you are connecting to TBT fall back server which is considered an offence and due to which your Ports might get blocked in the future. Request you to connect to the TBT primary POP Server only.”
- iii. Further, in its Project Borse Report, Deloitte had noted that –

“We were given to understand that the Secondary POP Server was also an active server, and there was no system whereby the Secondary POP Server would start up only when the primary server failed, or to ensure that TMs connected to Secondary POP Servers only when the primary server failed or was down. By February 16, 2012, OPG Securities was still connected to the Secondary POP Servers despite the reminders there were multiple e-mails indicating that OPG Securities did not move off the fallback server even by the end of the month. We came across various e-mails from COLO Support to OPG Securities requesting them to move to the primary server, however OPG Securities kept stalling, requesting for another day and then stating that they were conducting some testing and needed to stay connected for a few additional days. It is pertinent to note that Jagdish Joshi, Avadbut Gharat and Mahesh Soparkar were all marked on these e-mails, however none of them intervened or requested the TM to move to the primary server. Bhavya separately escalated the issue to Jagdish Joshi at least twice, but we did not see a response from him in this regard.

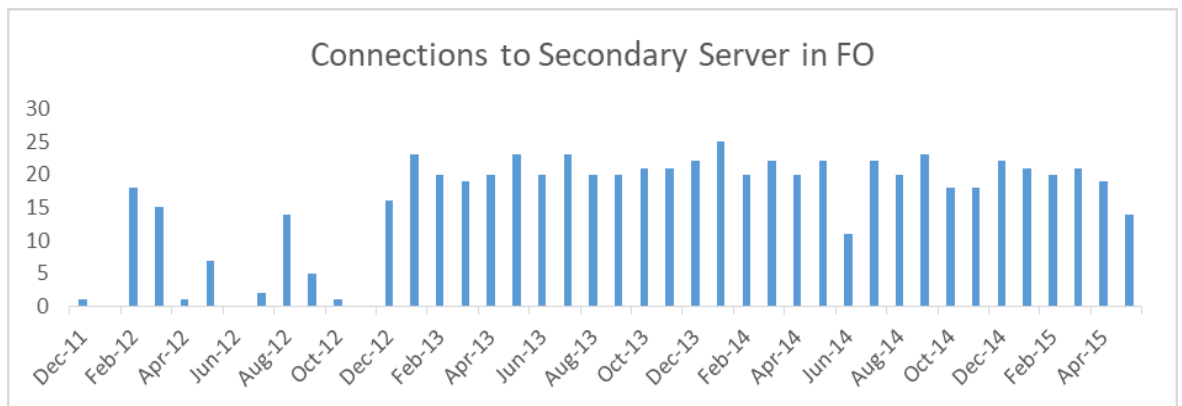
We observed another e-mail from Bhavya Gandhi to the Colo Support team with PSM IICS team, Avadbut, Jagdish, Balakrishnan, Swaminathan and Smrati Kaushik on copy on 15 March 2012

listing out TMs who were still connecting to fallback servers again, and reiterating that TMs are not supposed to connect to fallback servers unless intimated by the Exchange. He also stated “They need to justify why they are again connecting to fallback servers, since there is no problem with any of the primary servers and no intimation from Exchange regarding the same”. He sent a follow up to this e-mail on the same date. OPG Securities was identified as repeat offender.

We observed an e-mail dated 8 August 2012, whereby OPG Securities wrote to Jagdish Joshi requesting to connect to the secondary TBT server for a few days for some analysis. The COLO Support team provided a confirmation to the TM on 10 August 2012 that the TM was enabled on the Secondary POP Server for one week. This e-mail trail indicates that there was a period when NSE had implemented some controls whereby the TM could not connect to the Secondary POP Server without being enabled on the server by the NSE team. However, this information was not provided to us by the NSE team.”

iv. Subsequently, in its Project Regler Report, Deloitte had further observed –

“Further, per review of connectivity to the Secondary POP Server data, we observed that during the period 2010–2015, OPG Securities had connected to the Secondary POP Server on 670 trading days in the Futures and Options segment. Further, during the period 2013–2014, OPG had connected to the Secondary POP Server on 12 trading days in the Currency Derivatives segment and during the period 2012–2014, OPG Securities had connected to the Secondary POP Server on 264 trading days in the Cash Market segment.



Further as per analysis of the complaint dump and the connection to Secondary POP Server data, we observed the following:

- Out of the 670 trading days on which OPG had connected to the Secondary POP Servers, complaints to COLO support were made on 240 days.
- For the remaining 430 days, we did not observe any complaints made to the COLO support.
- Further, for the 240 days where OPG Securities had connected to the Secondary POP Server and had made complaints to the COLO support, only on 5 days the complaints were pertaining to TBT disconnection.

We have observed e-mails from OPG dated May 4, 2012 where they have responded to NSE's warnings stating that they would revert back to the primary Server only after the market hours and another e-mail dated February 21, 2012 stating that they would revert back to the primary Server in few days because they don't want to "fiddle around with the setup."

- 8.23 However, as per the login analysis of OPG Securities on Secondary POP Server (as contained in the SCN), it is observed that even after warning/advisories by NSE, OPG Securities still continued to login onto the Secondary POP Server on the subsequent days. The same is tabulated below:

TABLE XX – CONNECTIONS TO SECONDARY POP SERVER DESPITE ADVISORIES		
DATE OF WARNING / ADVISORY	SEGMENT FOR WHICH ADVISORY ISSUED	OBSERVATION
10.02.2012	Futures and Options	OPG Securities continued to connect to POP Server.
14.02.2012	Futures and Options	OPG Securities continuously connected till 29.02.2012.
21.02.2012	Futures and Options	OPG Securities continuously connected till 29.02.2012.
15.03.2012	Futures and Options	OPG Securities continuously connected till 30.03.2012.
4.05.2012	Cash Market	OPG Securities continuously connected till 7.06.2012.
18.05.2012	Futures and Options and Cash Market	OPG Securities continuously connected till 7.06.2012.

- 8.24 I find that OPG Securities' submission that only 9% of their TBT IPs were connected to Secondary POP Server is irrelevant since the material issue herein was not the percentage of TBT IPs connecting to such Server but rather the advantage gained over other TMs by connecting to the said Server, which was consistently the least crowded Server among all the POP Servers. Further, I also find that OPG Securities had failed to substantiate its submission that the business transacted (Volume traded) by the TBT IPs on the Secondary POP Server was extremely low.
- 8.25 It is also observed from the logs furnished by OPG Securities (Annexure 17 of its e-mail dated March 3, 2017) that it consistently started the automated login process even for TBTCOLO27 (Secondary POP Server) from around 7.00–7.05 am. This clearly indicates that OPG Securities deliberately logged in to the Secondary POP Server irrespective of any disconnection issues relating to the primary POP Server.
- 8.26 A very essential characteristic of TCP/IP dissemination is that delivery of data can be done only to one recipient at a time. In the scenario of co-located TMs carrying out algo trading, variance in time, in terms of milli seconds and micro seconds, in the receipt of data is immensely significant. Therefore, the Secondary POP Server connections made by OPG Securities need to be looked at in this background. Accordingly, I find that OPG Securities' submission that they connected to Secondary POP Server due to disconnection issues related to primary POP Servers cannot be accepted since it is unimaginable that a TM had faced disconnections on 95–99% of its trading days (as noted from the login data in 2013–2014).

Since there were no such large scale disconnection issues with other TMs, it is not credible that the Noticee alone could have suffered such disconnections. Further, I find that the analysis of the complaints referred to by OPG Securities clearly showed that it was only on 5 days in the Futures and Options segment that such complaints were pertaining to TCP/IP TBT disconnections. I also note that OPG Securities had itself stated that disconnections to the primary POP Servers became less frequent in 2013 but yet it continued connecting to the Secondary POP Server.

- 8.27 I find that during the years 2013 and 2014, OPG Securities connected to the Secondary POP Server almost on every trading day; to be precise, on 99% of trading days in 2013 and 95% of trading days in 2014, respectively. As noted from the preceding paragraphs, given the lesser density of connections at the Secondary POP Server, a TM connected to such Server may receive data ahead of other TMs connected to the primary POP Server. The substantial number of connections made by OPG Securities to the Secondary POP Server (670 trading days and on most days without a valid reason) clearly indicates that such TM did so deliberately to gain an unfair advantage over other TMs. Upon a consideration of the issues discussed above, I find that OPG Securities displayed complete disregard for the norms laid down by NSE for moving to Secondary POP Server.
- 8.28 I note that OPG Securities is *inter alia* alleged to have violated the provisions of Regulation 4(1) of the PFUTP Regulations 2003 and the applicable provisions of the Code of Conduct as specified in Schedule II of Regulation 9 of Stock Brokers Regulations. Regulation 4(1) of the PFUTP Regulations 2003 states that no person shall indulge in *inter alia* an '**unfair trade practice**' in securities. Further, the applicable provisions of the Code of Conduct *inter alia* obligate a TM to abide by standards of integrity and to act with due skill, care and diligence in the conduct of his business and also ensure compliance with statutory requirements.
- 8.29 In this context, I note that the Hon'ble Supreme Court in the case of **SEBI v. Kanhaiyalal Baldevbhai Patel & Others, 2017 SCC Online SC 1148**, had opined that '**unfair trade practice**' is not necessarily the same as 'fraud' and also observed that: "*Although unfair trade practice has not been defined under the Regulation, various other legislations in India have defined the concept of unfair trade practice in different contexts. A clear cut generalized definition of the 'unfair trade practice' may not be possible to be culled out from the aforesaid definitions. Broadly trade practice is unfair if the conduct undermines the ethical standards and good faith dealings between parties engaged in business transactions. It is to be noted that unfair trade practices are not subject to a single definition; rather it requires adjudication on case to case basis. Whether an act or practice is unfair is to be determined by all the facts and circumstances surrounding the transaction. In the context of this regulation a trade practice may be unfair, if the conduct undermines the good faith dealings involved in the transaction. Moreover the concept of 'unfairness' appears to be broader than and includes the concept of 'deception' or 'fraud'*". Further, in **SEBI**

vs. Rakhi Trading Private Limited (2018) 13 SCC 753, the Hon'ble Supreme Court had also observed: "Having regard to the fact that the dealings in the stock exchange are governed by the principles of fair play and transparency, one does not have to labour much on the meaning of **unfair trade practices** in securities. Contextually and in simple words, it means a practice which does not conform to the fair and transparent principles of trades in the stock market."

- 8.30 It is noted that the Regulation 4(1) of the PFUTP Regulations 2003 starts with the phrase 'without prejudice to the provisions of Regulation 3'. This implies that the prohibitions against fraudulent, manipulative and deceptive trade practices falling within the scope of Regulation 3 of the PFUTP Regulations 2003 do not bar the initiation of proceedings under Regulation 4(1) of the aforesaid Regulations with respect to 'unfair trade practice' in securities. Therefore, Regulation 4(1) of the PFUTP Regulations 2003 has to be read to have its own ambit which adds to what is contained under Regulation 3 of the aforesaid Regulations. Having regard to the aforementioned, I find that by repeatedly connecting to the Secondary POP Server almost on a daily basis without valid reasons and ignoring NSE's warning/advisories, for the purpose of gaining an unfair advantage over the other TMs, OPG Securities can be stated to have indulged in 'unfair trade practice' in securities, which is prohibited under Regulation 4(1) of the PFUTP Regulations 2003. Further, I find that the aforementioned recalcitrant conduct of OPG Securities clearly indicates that the said TM failed to abide by standards of integrity, due skill, care and diligence in the conduct of its business and ensure compliance with statutory requirements. In light of the aforementioned, it will also follow that the profits which accrued to OPG Securities on account of Secondary POP Server connections would qualify as unlawful.
- 8.31 In the context of the allegation of unfair advantage gained by OPG Securities through its Secondary POP Server connections, the SCN has alleged collusion/connivance of NSE and OPG Securities. However, I find the same is not substantiated in the absence of specific sufficient evidence.

Issue 4: Unlawful gains made by OPG Securities.

- 8.32 The SCN alleges that OPG Securities gained materially by being the first logger as well as by connecting to the Secondary POP Server.
- 8.33 ISB was engaged by NSE to calculate the profits earned by the TMs, especially on days when they logged in first to the PDC either through one of the POP Servers or the Secondary back-up Server. In the ISB's Report of November 2017, the following was *inter alia* stated:
- a. "It appears that one TM, OPG Securities, seems to have made higher profits by logging in early. They make higher profits of about close to ₹25 Crores when they login early when compared to

situations when they do not. However when we scale the profits with the volume traded and compute a rate of return, the advantage disappears. They earn a return of 1.92 basis points when they login early and 1.93 basis points when they do not. This suggests that the TM's traded volume increased on days that they logged in early... It appears that the profit advantage when looking at total profits is due to the fact that they login first more frequently than not. Further, the frequency of early logins is extraordinarily high for this TM.

- b. OPG Securities' profits from proprietary trades on days when they log in first are greater than profits from proprietary trades when they do not login first.
- c. OPG Securities' proprietary profits on days of first login is ₹15.55 Crores whereas they make loss of ₹0.02 Crores when they are not first on Secondary POP Server.
- d. Comparing the profits from client trades, we find that the average profit on days of first login to the Secondary POP Server are lower than that on days on which the TM was not the first to login to the Secondary POP Server. However, the medians show that profits on days of first login are about eight times larger than those on days when the TMs did not login first. Here again, OPG Securities makes large profits when they login first while making losses when they do not login first."

8.34 TAC Expert Committee Report had also made the following observations on the trade pattern analysis of OPG Securities:

- i. The trade pattern analysis of OPG Securities Ltd. for days in which INDIA VIX closing changed more than 10% as compared to its previous close was analysed. During CY 2012 and CY 2013 there were 21 days where INDIA VIX had changed more than 10% as compared to its previous close. In addition to the above 21 days, analysis for 9 random days from CY 2012 & CY 2013 was also done. The randomly selected trading days are as follows:
18-Jan-2012, 29-Feb-2012, 12-April-2012, 25-June-2012, 10-Oct-2012, 07-Nov-2012, 17-Jan-2012, 14-March-2013, 22-May-2013.
- ii. Thus a total of 30 days were analysed for the period CY 2012 and CY 2013. It was found that during these 30 days OPG Securities Ltd had consistently logged in first on select servers.
- iii. It may be noted that while OPG had a sizeable portion of daily UMLO traded before the introduction of MTBT, there is a fall in OPG's UMLO trades % vis-à-vis total UMLO trades during the day post introduction of MTBT. For all other TMs there %traded pattern did not change with introduction of MTBT (except for the fact that they were now gaining at the expense of OPG).
- iv. Also early login gives the information advantage but does not guarantee success by itself. There are several other factors, such as the algorithmic strengths, chance factors, and the types of trades and scripts that a user may be focused on. What we claim is that all other factors being equal, early login increase the chances of executing UMLO trades as a result of getting early access to information.

- v. **Findings:** OPG securities gained materially from the exploitation of TBT architecture, in that, once Multicast TBT (MTBT) was introduced, OPG success in getting UMLLO trades executed reduced dramatically, while it did not fundamentally change for other TMs. Thus, in light of our understanding of the TBT system architecture, OPG's earlier success in UMLLO trades can be attributed to its exploitation of the TBT architecture.

8.35 As noted from the SCN, from the audited balance sheets of OPG Securities, it is observed that the revenue from share trading increased from ₹40.21 Crores in 2012–13 to ₹54.62 Crores in 2013–14. The profit also increased significantly from ₹1.36 Crores in 2012–13 to ₹11.13 Crores in 2013–14. Also from the conclusions in the ISB Report, it is noted that OPG made higher profits of about to close to ₹25 Crores when they login early as compared to situations when they do not login early. Accordingly, as explained in the preceding paragraphs, OPG Securities gained materially by being the first logger as well as by connecting to Secondary POP Server.

SUBMISSIONS MADE BY THE NOTICEES

8.36 The Noticees have *inter alia* submitted as under:

- i. *The ISB Report specifically denies the claim that first login is associated with higher profits. Such an outcome would have resulted in higher early login profits for the TMs alleged to have tried to make unfair profits. This inference is based on the assumption that capital would have flowed to TMs who could earn higher profits than other TMs. ‘... The fact that TMs make lower rupee profits while logging in early indicates that the opportunities to make large profits were not taken advantage of. The TMs and the market in general were not aware about the early login status of specific TMs and hence more capital was not invested despite the possibility of higher profits.’ (Page 5 of ISB Report). The average daily intraday profits made by OPG were substantially less compared to other TMs who were logging into Secondary POP Server and while the SCN incorrectly only focusses on total intraday profits. [Table @ Page 36 of ISB Report].*
- ii. *ISB Report has called ‘Gross Revenue’ or ‘Revenue from Share Trading’ number incorrectly as a so called ‘profit’ number. In this regard it is pertinent to note the response to Q7 of Prof. Thirumalai, in the cross examination dated February 26, 2019, which states that ‘This is based only using Tick by Tick data. This captures round trip profit and hence excludes all applicable costs and standard charges’. This statement makes it clear that no standard charges and costs including statutory levies (Securities Transaction Tax, SEBI Charges, Stamp charges etc.) and standard charges such as (Colocation charges, NSE Transaction Charges, Clearing Charges, Trader salaries etc.) have been deducted from the so-called profit figures.*

- iii. *ISB Report shows that the average rate of return made by the Noticee per trade on the first login days is 1.92 bps which is lesser than the rate of return made on non-first login days (1.93 bps).*
- iv. *ISB Report mentioned that the Noticee's average Revenue ('Profit') in the Multicast period are higher than those made during the TCT IP regime. It is also pertinent to note that Average intra-day Gross Revenue on first login days at 8 lakhs is similar to Average intra-day Gross Revenue (7.4 lakhs) on non-first login days.*
- v. *The analysis conducted in the TAC Report is based on limited data, and therefore, the observations therein cannot be conclusive (Ref: Cross examination of Professor Om Damani). No reason is assigned as to why only a few days of trading were considered. Further, all factors affecting a trade were not taken into consideration. The observations are made only on 3 legged UMLO trades of the Noticee which represent less than 4% of the trades taken place in the NSE. Moreover, the TAC Report ignores the material differences between the TCP IP and the Multicast architectures of the NSE.*

FINDINGS

- 8.37 I have considered the aforementioned observations contained in the ISB Report read with findings of the TAC Expert Committee Report. In this context, I note that in its reply dated May 12, 2016, NSE had stated as under:
- a. NSE allowed TMs to place 2L or 3L orders wherein a TM had the flexibility of simultaneously buying or selling a number of different securities that normally could only be achieved by placing separate orders. A simple hypothetical example of a 3L order is to 'buy 300 shares of IBM at price \leq ₹130, sell 100 shares of HUL at price \geq ₹900 and buy 300 shares of ITC at price \leq ₹350'. This MLO will not trade unless the stock prices for IBM, HUL and ITC allow each order on an individual stock, known as a leg, to execute. If the price and quantity parameters match with the order in the trading system, then the order is executed.
 - b. The TAC Expert Committee Report defines a UMLO as an order having 3 legs. It is worth noting that value of UMLO trades ranged between 0.7% and 2.1% of the total traded value on identified dates before introduction of multicast TBT. UMLO entered by all TMs were in the range of 2.1% to 6.2% of total orders entered into the system during the same period i.e. UMLO is a very small portion of the total market. If a TM was able to access the data earlier than others as alleged, it would be logical for the TM to exploit the advantage across the market instead of focussing on a very small portion of the market. When we consider the total Futures and Options turnover, OPG Securities accounts for between 0.59% and 2.28% on identified dates before

introduction of MTBT Protocol and between 0.36% and 2.35% after introduction of MTBT. Conclusions drawn on a narrow date set are not supported when entire market is taken into consideration.

- c. OPG Securities remained in top 5 ranks till as late as December 2014 almost for 6 months after the introduction of MTBT which again does not support the allegation that its success in UMLO reduced after the introduction of MTBT.

8.38 I further note that in its Report, ISB has stated that the determination of first login had been made on the basis of the following:

- a. On a particular day, we classify a TM as having logged in first if the TM was the first to log into any of the three Ports on the POP Server that connected first to the PDC. Although there is a very small time difference in dissemination of data between Ports, we have not taken that into consideration.
- b. We report our profit results separately also for days on which TMs logged in first through the Secondary POP Server.

8.39 Upon a consideration of paragraphs 8.37 and 8.38, I find as under:

- i. The computation of profit made by ISB in its Report was on the basis that OPG Securities made higher profits by logging in early. I find that such computation based on an analysis of first login (having regard to the findings on the issue of first login/early connect at paragraphs 8.4–8.13 of this Order) cannot be adopted for the purpose of this Order.
- ii. Further, the findings that OPG Securities gained materially from the exploitation on the *TCP/IP TBT System* architecture based on its success in 3L UMLO trades does not stand substantiated having regard to the reply made by NSE at paragraph 8.37 above, which was supported by relevant historical data produced by the Exchange.

8.40 Having regard to the aforementioned, I am unable to accept the computation of unlawful gains as made out in the SCN to the extent of first login made by OPG Securities.

8.41 **UNLAWFUL GAINS MADE BY OPG SECURITIES FROM SECONDARY POP SERVER CONNECTIONS:** As per the ISB Report, the total intraday trade profits made by OPG Securities in the F&O segment from Secondary POP Server connections on the proprietary account was ₹15.53 Crores (Table 15 of the ISB Report). Further, the total

overnight profits made by OPG Securities in the F&O segment from Secondary POP Server connections on the proprietary account was ₹15.73 Crores (Table A11 of the ISB Report). The aforementioned amount has been arrived at by ISB taking into consideration the number of days OPG Securities had established connections to the Secondary POP Server for the period from January 2010 to April 5, 2014 i.e. 269 trading days, when NSE disseminated TBT data in the TCP/IP format (MTBT was only introduced in April 7, 2014). Incidentally, in their submissions, the Noticees had stated that they were conducting a financial audit of the financial data and shall provide a Certificate from a Chartered Accountant to show that there was no abnormal gains made by OPG Securities in any manner by any exploitation of any alleged advantage as benchmarked by intra-day profits. In this context, I note that no such Certificate/Audit Report, etc. has been submitted by the Noticees to SEBI.

- 8.42 From the Deloitte Project Regler Report, it is noted that OPG Securities had logged onto the Secondary POP Server for a total of 670 trading days during the period from January 2010 to May 22, 2015 (connection to Secondary POP Server was first established on December 11, 2011), out of which it had forwarded complaints to Colo Support on only 240 trading days; for the remaining 430 trading days, no complaints were made by OPG Securities to Colo Support in respect of Secondary POP Server connections.
- 8.43 Out of the aforementioned 240 trading days when OPG Securities had forwarded complaints to Colo Support, I note that for 105 trading days, the complaints pertained to Secondary POP Server connections made after the introduction of MTBT i.e. April 7, 2014 onwards. Accordingly, OPG Securities had forwarded complaints to Colo Support for 135 trading days (240 days – 105 days) during the period from January 2010 to April 5, 2014 in respect of Secondary POP Server connections.
- 8.44 As stated earlier, the ISB Report had computed profit taking into consideration the 269 trading days when OPG Securities had connected to the Secondary POP Server during the period from January 2010 to April 5, 2014. During the aforesaid period, OPG Securities had forwarded complaints to Colo Support for 135 trading days. Without getting into the nature and merit of the complaints, I presume, to the benefit of the Noticee(s) that the complaints were serious enough to warrant a switchover from the primary POP Server to the Secondary POP Server. I am therefore, driven to the conclusion that connections established to the Secondary POP Server for the remaining 134 days (269 days – 135 days) cannot be justified.

8.45 Upon a consideration of the aforementioned and in light of the findings at paragraphs 8.18–8.30 regarding Secondary POP Server connections by OPG Securities, I find that the unlawful gains made by the aforesaid TM amounted to ₹15.57 Crores, which has been computed as under:

TABLE XXI – UNLAWFUL GAINS MADE BY OPG SECURITIES IN THE F&O SEGMENT		
A.	TOTAL NO. OF DAYS OF SECONDARY POP SERVER CONNECTIONS	269 DAYS
B.	TOTAL NO. OF DAYS OF SECONDARY POP SERVER CONNECTIONS SUBSEQUENT TO COMPLAINTS TO COLO SUPPORT	135 DAYS
C.	TOTAL NO. OF DAYS OF OPG'S UNAUTHORISED CONNECTIONS TO THE SECONDARY POP SERVER [C = A – B]	134 DAYS
D.	TOTAL INTRADAY AND OVERNIGHT PROFIT ON DAYS OF SECONDARY POP SERVER CONNECTIONS [AMOUNT IN ₹ CRORES]*	₹31.26 CRORES
E.	TOTAL UNLAWFUL GAINS MADE BY OPG SECURITIES THROUGH UNAUTHORISED CONNECTIONS TO SECONDARY POP SERVER [AMOUNT IN ₹ CRORES] [E = (C* D) ÷ A]	₹15.57 CRORES

*BASED ON TABLE A11 AND TABLE 15 OF THE ISB REPORT FOR THE PERIOD JANUARY 2010 TO APRIL 5, 2014, AS EXPLAINED AT PARAGRAPH 8.41.

9. CONCLUSION

9.1 SEBI has been entrusted with the important mandate of protecting the interests of investors and safeguarding the integrity of the securities market under the provisions of the SEBI Act. It is, therefore, necessary that SEBI exercise these powers firmly and effectively to insulate the market and its investors from the fraudulent actions of any of the participants in the securities market, thereby fulfilling its legal mandate. The basic premise that underlines the integrity of securities market is that persons connected with securities market conform to standards of transparency and ethical behaviour prescribed in securities laws especially in the Code of Conduct and also ensure that they do not resort to unfair trade practices in securities.

9.2 In the instant proceedings, for the reasons detailed in the preceding paragraphs 8.18–8.30, I have no hesitation in concluding that OPG Securities has violated the provisions of Regulation 4(1) of the PFUTP Regulations 2003 and Clauses A(1), (2) and (5) of the Code of Conduct as specified in Schedule II of Regulation 9 of Stock Brokers Regulations. In addition, I find that Noticees 2–4 being Directors of OPG Securities are responsible for the affairs of the TM and therefore, are vicariously liable for the failure by the said TM in ensuring compliance with the provisions of Regulation 4(1) of the PFUTP Regulations 2003 and the Code of Conduct as specified in Schedule II of Regulation 9 of Stock Brokers Regulations. In view of the fact that OPG Securities had made unlawful gains of ₹15.57 Crores (refer to paragraph 8.45), which could not have been made but for the illegal connections made to the Secondary POP Server, I am inclined to direct disgorgement against the aforesaid TM and its Directors in the instant proceedings.

9.3 I also find that the Noticee Company acting through its Director, Sanjay Gupta, had concealed/destroyed vital information in violation of Section 11C(2) of the SEBI Act (see paragraph 7.1), which could have been helpful for SEBI to arrive at more conclusive findings in the matter.

10. **DIRECTIONS**

10.1 In view of the foregoing, I, in exercise of the powers conferred upon me under Section 19 read with Sections 11(1), 11(2)(b), 11(4) and Section 11B of the SEBI Act, Regulation 11 of the SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations, 2003 and the SEBI (Stock Brokers and Sub Brokers) Regulations, 1992, hereby direct as under:

- i. OPG Securities Private Limited shall be prohibited from accessing the securities market and from buying, selling or otherwise dealing in securities, in its proprietary account(s), either directly or indirectly, for a period of **five years** from the date of this Order. During the period of restraint, the existing holding of securities (including units of mutual funds) of the aforementioned Noticee shall remain frozen.
- ii. OPG Securities Private Limited, in its capacity as a Stock Broker, shall not take any new clients for a period of **one year** from the date of this Order.
- iii. Sanjay Gupta, Sangeeta Gupta and Om Prakash Gupta shall be prohibited from accessing the securities market and from buying, selling or otherwise dealing in the securities market, either directly or indirectly, for a period of **five years** from the date of this Order. During the period of restraint, the existing holding of securities (including units of mutual funds) of the aforementioned Noticees shall remain frozen.
- iv. OPG Securities Private Limited and its abovementioned Directors shall disgorge an amount of **₹15.57 Crores** as ascertained in paragraph 8.45 above along with interest calculated at the rate of 12% per annum from April 7, 2014 onwards, till the date of payment. The aforementioned Noticees shall pay the said amounts jointly and severally within 45 days from the date of this Order either by way of demand draft drawn in favour of “*Securities and Exchange Board of India*”, payable at Mumbai or by e-payment* to SEBI account as detailed below:

BANK	BRANCH	RTGS CODE	BENEFICIARY NAME	BENEFICIARY ACCOUNT NO.
BANK OF INDIA	BANDRA KURLA BRANCH	BKID 0000122	SEBI	012210210000008

**Notices who are making e-payment are advised to forward the details and confirmation of the payments so made to the Enforcement Department of SEBI for their records as per the format provided in Annexure A of Press Release No. 131/2016 dated August 09, 2016, which is reproduced as under:*

1. CASE NAME:	
2. NAME OF THE PAYEE:	
3. DATE OF PAYMENT:	
4. AMOUNT PAID:	
5. TRANSACTION NO:	
6. BANK DETAILS IN WHICH PAYMENT IS MADE:	
7. PAYMENT IS MADE FOR: (LIKE PENALTIES/ DISGORGEMENT/RECOVERY/SETTLEMENT AMOUNT AND LEGAL CHARGES ALONG WITH ORDER DETAILS:	

10.2 I hereby also dispose of the SCN dated July 3, 2018 read with the Supplementary SCN dated July 31, 2018, against Aman Kokrady, without any further directions.

10.3 This Order shall come into force with immediate effect.

10.4 A copy of this Order shall be served upon the recognized Stock Exchanges, Depositories and Registrar and Transfer Agent(s) of Mutual Funds for necessary compliance.

Place: Mumbai
Date: April 30, 2019

G. MAHALINGAM
WHOLE TIME MEMBER
SECURITIES AND EXCHANGE BOARD OF INDIA