

	HEADERS	DETAILS
1. Intimation of Incident (T-day, within 1 Hour of the Incident)	1. Letter / Report Subject - Name of the Member -- Member Code -	Reporting of technical glitch Zerodha Broking Limited NSE: 13906; BSE: 6498, MCX: 56550
	2. Designated Officer (Reporting Officer details)	Name: Venu Madhav
	3. Date & Time of Incident	30-06-2023; 03:08 PM
	4. Exchanges on which Technical Glitch was encountered (NSE, BSE, MCX, NCDEX, MSEI)	BSE
	5. Intimation to clients about the Technical Glitch. (Please attach screenshots of communications to clients)	Bulletin
	6. Network Connectivity Issues / Hardware Issues / Software Issues / Human Error / Other (Please Specify (if more than one, please separate with commas))	Network Connectivity Issues at Refinitiv (an exchange empanelled RMS and OMS vendor level) The issue was Intermittent. The impact was on the order placement, order modifications, and order cancellations between 03:08 PM to 03:22 PM intermittently. The said issue did not affect all users, but only a set of users operating out of a particular Silo (Setup). A bulletin was put up on our website informing clients about the issue. We immediately raised a ticket with Refinitiv.
	7. Additional Details about the Technical Glitch, if Any.	The issue was resolved at 03:22 PM
2. Preliminary Incident Report (T+1 day)	1. Date & Time of Incident & Incident duration (in Minutes)	30-06-2023; 03:08 PM (14 minutes) The issue was Intermittent. The impact was on the order placement, order modifications, and order cancellations in the BSE, BCD and BFO segments between 03:08 PM to 03:22 PM intermittently owing to what seems to be a network connectivity issue at OmneNEST's end (exchange empanelled RMS and OMS vendor). The said issue did not affect all users, but only a set of users operating out of a particular Silo (Setup). The issue was fixed by the OmneNEST (formerly known as Refinitiv) team.
	2. Incident Description	RCA from our OMS vendor OmneNEST (formerly known as Refinitiv) is awaited. We immediately notified the OmneNEST (formerly known as Refinitiv) team by raising a ticket.
	3. Immediate action taken (provide brief details)	A bulletin was put up on our website informing clients about the issue.
	4. Business Impact i) Number of Clients Impacted ii) Any other impact	i. A small section of our clients were impacted by the incident. The number of unique users impacted by this incident were 4.7k and the total orders impacted was 8.8k. There were very few complaints (368 calls and 122 tickets across all segments). ii. Further, there was no other impact.
	5. Were alternate trading channels available for clients (list all the alternate channels) i) Was there a spike in traffic on the alternate channels available to clients? If yes, provide details.	i. The impacted users had the option of placing orders on NSE/CDS during the entire duration of the issue. The issue was Intermittent. The users were able to place orders and modify/ cancel the orders post multiple retries even when the issue was ongoing.
	6. Was the issue caused or encountered by a third-party vendor or service provider? i) Name of the third-party vendor or service provider and a brief description of the issue. ii) Do you have a back-up vendor for the said services	i. Yes, the issue occurred due to network connectivity issues at OmneNEST formerly known as Refinitiv (an exchange empanelled RMS and OMS vendor level). ii. We are in the process of building our own RMS and OMS system.
	7. Was the issue encountered on the Exchange-provided environment? If Yes, kindly provide details of intimation and communication sent to the Exchange.	No
	8. Did you move operations to the Disaster Recover (DR) site? If Yes, what was the Recovery Time?	No
1. Date & Time of Incident & Recovery & Incident duration (in Minutes)	30th June 2023, Time of Incident - 03:08 PM; Recovery - 03:22 PM; Duration - 14 minutes	

<p>3. RCA of Technical Glitch Incident (T + 14 days)</p>	<p>2. Incident Description & chronology of events (Please provide brief details)</p>	<p>The issue was Intermittent.</p> <p>The impact was on the order placement, order modifications, and order cancellations in the BSE Equity, BSE Currency Derivative and BSE Equity Derivative segments between 03:08 PM to 03:22 PM intermittently. As per the RCA shared by OmneNEST (exchange empanelled RMS and OMS vendor) on 10th July attached as Annexure 1, the principal cause for the issue was due to the high bandwidth utilization at the exchange link. During the course of analysing further, certain errors were discovered on the Windows server at OmneNEST's end including high memory usage.</p>
	<p>3. Business Impact: Please provide details on the points below: i) Number of clients impacted ii) Number of client orders impacted iii) Any P&L impact iv) Any other impact on Business</p>	<p>The said issue did not affect all users, but only a set of users operating out of a particular Silo (Setup).</p> <p>i. A small section of our clients were impacted by the incident. The number of unique users impacted by this incident were 4.7k. ii. The total orders impacted was 8.8k. iii. No impact on P&L. iv. No other impacts.</p>
	<p>4. Details of Client Complaints Received (Please provide details of claims of impacted clients) i) Number of Complaints Received ii) Number of Complaints Settled iii) Number of pending complaints iv) Total amount claimed by complainants</p>	<p>i. There were very few complaints. 368 calls, 122 tickets and 3 exchange complaint across all segments. ii. All the client complaints via tickets and calls have been resolved. iii. There are three complaint open at the exchange as on date of submission of this RCA. We have submitted our response to the exchange regarding the complaint. iv. The amount claimed by the complainants is about 29k.</p>
	<p>5. Root Cause Summary (Pl attach the detailed Report separately)</p>	<p>Initial investigation pointed towards high bandwidth utilization at BSE exchange link. Immediately after the said incident occurred, we proactively reached out to BSE asking them to upgrade our bandwidth from current bandwidth of 4 Mbps to 10 Mbps. A copy of this email sent to BSE on 30th June, 16:01 has been attached herewith as Annexure 2. Subsequent to our sending the email to BSE, BSE has internally taken up the activity to upgrade the line for which they've sent us emails asking for details, which were provided to BSE. However, this upgradation activity did not happen till the 6th of July. The leased line was subsequently upgraded only on the 12th of July, after we had faced a similar bandwidth related incident on 07th July.</p> <p>Subsequent to the incident on 07th July, OmneNEST carried out an RCA for both incidents of 30th June and 07th July and concluded that the primary cause of the issue was the bandwidth being utilized to its maximum capacity. This delay in RCA for the incident of 30th June was owing to the fact that we OmneNEST had not received the bandwidth utilisation report from the Stock Exchange until 10th July. On 10th of July, BSE shared the bandwidth report for the incident of 07th of July in which the threshold appeared breached. OmneNEST extrapolated the findings of this report and inferred that the prior incident of 30th June could also have occurred due to the same reason. A request to BSE asking for the bandwidth report of 30th June is awaited.</p> <p>Since then, on the 12th of July 2023, BSE has helped us to increase the bandwidth from 4Mbps to 45Mbps as well as increased the capacity from 500 orders per second to 2000 orders per second for each ID across all Silos (Setup).</p> <p>During the course of carrying out the RCA, it was also discovered that the application faced a few errors and that the server had a higher memory usage at OmneNEST's end. However there is no conclusive evidence to demonstrate that the server error is the root cause of the issue since the issue could have occurred in isolation of the bandwidth getting breached. OmneNEST has fixed the server related issues by carrying out a reboot of the application servers.</p> <p>RCA from OmneNEST shared on 10th July (exchange empanelled RMS and OMS vendor) covering both 30th June and 7th July glitch is attached in Annexure 1</p>
	<p>6. If the issue was caused or encountered by a third-party vendor or service provider, Please provide the below details: i) What services are being provided by the third-party vendor or service provider? ii) Time taken (in Minutes) by third-party vendor or service provider to resolve the issue.</p>	<p>i. Yes, the issue was partly caused due to issues (NIC errors) at OmneNest (an exchange empanelled RMS and OMS vendor). ii. Not Applicable</p>
	<p>7. Has a similar issue been encountered prior to the submission of this RCA Report?</p>	<p>A similar issue hasn't been encountered prior to the submission of this RCA, since Dec 2021 when we started reporting the glitches. But an issue of similar nature was encountered on 07th July 2023.</p>
	<p>8. Details of long-term preventive action (please provide all action points for long-term preventive action with the date from which they will be implemented) (please use additional sheets if necessary)</p>	<p>1. We have spread our customers across multiple physically independent data centres, OMS installations, and many leased lines with backup lines. Hence only a fraction of users will be impacted in such scenarios. 2. We have increased the bandwidth from 4Mbps to 45Mbps for our exchange link as well as increased the capacity from 500 orders per second to 2000 orders per second for each ID across all Silos (Setup). 3. We have requested BSE to provide dashboard for monitoring bandwidth usage for our exchange links on a real-time basis. 4. OmneNEST are monitoring for any possible spike in RAM usage and NIC errors. Furthermore, stand by server has been tested comprehensively and observed to be working fine and ready to switch over in case of any eventualities.</p>
	<p>9. Provide a detailed Architecture Diagram of the System.</p>	<p>Attached</p>