Frequently Asked Questions (FAQs) on OMD-D Resilience Enhancement

General Questions

1 **Question: What is the purpose of this resilience enhancement?**

Answer: To strengthen the technical resilience in OMD-D by including nodes in the secondary site as stand-by nodes for automatic failover, and to foster OMD-D service availability in case a servicing node in the primary site fails.

1) **Real-time data:** enable automatic failover to hot-standby node in secondary site in case service node in primary site cannot function properly

2) **Retransmission Service (RTS):** change from active-standby to active-active between primary and secondary site setup; meaning increasing to four active nodes in service

2 **Question: What is the major change in this resilience enhancement?**

Answer: This enhancement extends the existing capability of having the automatic failover intra-site to cross-site in the scenario of active node failure. The differences are summarised below:

3) For data content in **active-standby** resilience setup (please refer to Section 2.2.4.1 in OMD-D Interface Specification (v1.36) for the list of data content published in Conflated Channels)

Failure Scenario	Current	After Enhancement
1. One active node in the primary site fails	The standby node in the same site will automatically take over. There will be a short interruption in service for fault detection and take-over process.	
2. Both nodes in the primary site fail	Service interrupted until OMD-D is failover to the secondary site. There will be **at least 30 minutes** interruption for ready to connect to Secondary site.	The standby node in the secondary site will **automatically** take over. There will be a **short interruption** in service for fault detection and take-over process.

4) For data content in **active-active** resilience setup (please refer to Section 2.2.4.1 in OMD-D Interface Specification (v1.36) for the list of data content published in Streaming Channels)

Failure Scenario	Current	After Enhancement
1. One active node in the primary site fails	Data provisioning will be on **single line** only. The line with service provided by the faulty node is suspended.	The line with service provided by the faulty node will be taken over by a standby node in the secondary site automatically. There will be a short interruption in service for fault detection and take-over process. After the take-over, Data provisioning will be on **dual lines.** However, there may be a larger time difference (around 1 – 2ms, depends on the Client infrastructure) of message arrival in two different lines in OMD-D, as one line is provided by the primary site, while the other is provided by the secondary site.
2. Both nodes in the primary site fail	Service interrupted until OMD-D is failover to the secondary site. There will be **at least 30 minutes** interruption for ready to connect to Secondary site.	Both nodes will be taken over by the corresponding standby nodes in the secondary site. There will be a short interruption in service for fault detection and take-over process.

For details, please refer to Section 9.7 in OMD-D Developers Guide (v1.22) for the details of OMD-D Node Failover.

3 **Question: I am now subscribing OMD Derivatives Lite ("D-Lite") and/or Derivatives Standard ("DS"), are all channels in conflated (in active-standby resilience setup)?**

Answer: No, some channels in D-Lite and DS are actually in active-active resilience setup. Please refer to Section 9.7 in OMD-D Developers Guide (v1.22) for details.

4 **Question: I am now subscribing OMD Derivatives Premium ("DP") and/or Derivatives Fulltick ("DF"), are all channels in streaming (in active-active resilience setup)?**

Answer: No, some channels in DP and DF are actually in active-standby resilience setup. Please refer to Section 9.7 in OMD-D Developers Guide (v1.22) for details.

5 **Question: If my system is now capable to handle the node failover scenario in OMD Derivatives Standard ("DS"), do I still need to make any changes to my system?**

Answer: In this enhancement, the behavior of node failover from the primary site to the secondary site is the same as the intra-site node failover in the current OMD-D.

Clients are recommended to assess the impact by referencing the latest OMD-D technical documents provided on OMD-D web corner. To facilitate Clients to do the test and confirm the system readiness, a canned data set will be available by 1 April 2021 and OMD-D Readiness Test environment will be available in mid-April 2021.

6 **Question: Is there any change on Refresh Service in this resilience enhancement?**

Answer: Refresh Service will also be enhanced to allow cross-site automatic failover.

7 **Question: After the launch of resilience enhancement, is the Disaster Recovery Signal (105) message still valid? If yes, in what scenario would we receive this message?**

Answer: The Disaster Recovery Signal (105) message is still valid and will be published during the site failover of OMD-D. Site failover of OMD-D will be triggered in the events of:
a) HKEX Primary Data Center Failure; or
b) Site failover of Derivatives Trading System (HKATS)
Please note that the handling of Disaster Recovery Signal (105) message remains unchanged.

8 **Question: What is the impact of having 1 – 2 milliseconds between 2 lines after the node failover?**

Answer: In case of a packet loss in the faster line, it may take a slightly longer time for the corresponding message to arrive in the slower line. A sufficient buffer is required to cache the packets in the faster line while waiting for the arrival of the corresponding message in the slower line for line arbitration. Clients are suggested to review their system design for this case.

9 **Question: How long should I expect the interruption of service when there is a node failover?**

Answer: Normally, the interruption time could be around 2 minutes for the fault detection and failover process. The actual failover time may vary by the incident scenario.

10 **Question: Currently, my OMD-D feed handler is handling multiple OMD-D datafeeds, e.g. Derivatives Standard ("DS") and Derivatives Fulltick ("DF"). What is the impact on me?**

Answer: Please refer to Question 1 in this FAQ for the change due to this enhancement. Please note that both data content in active-standby mechanism and active-active mechanism exist in the individual DS and DF. Clients should assess if their systems can manage the node failover in OMD-D.

11 **Question: If I experience a service interruption, how can I distinguish whether it is due to OMD-D node failover or network failure?**

Answer: In case of a network failure, there would be no real-time message and heartbeat message in all channels on one line or both lines. In this case, Clients are suggested to liaise with the network carrier and check the healthiness of the line(s) as soon as possible.

On the other hand, in the situation of OMD-D node failover for data content in the "**active-standby**" resilience setup, only the particular channel(s) would have no real-time message and heartbeat message in **both lines** temporarily. For the node failover for data content in the "**active-active**" resilience setup, only the particular channel(s) on **the line with service provided by the faulty node** will have no real-time message and heartbeat message temporarily.

Clients may distinguish two cases by observing the scope and duration of service interruption.

Retransmission (RTS) Service related Questions

12 **Question: Is it mandatory to automatically hunt all 4 RTS servers after this enhancement?**

Answer: Although it is not mandatory, the purpose of providing 4 connectable RTS servers in this enhancement is to reinforce the service availability by minimising the interruption time. Clients are recommended to build the automatic hunting logic to shorten the emergency

handling time.

13 **Question: Can I choose RTS server in the secondary site as my primary connection?**

Answer: All four RTS servers are active for connection and the priority of connecting to RTS server is up to the Client's decision. Please note that if the real-time data service is operated in the primary site, the response time from RTS servers in the secondary site could be slightly higher than that in the primary site due to the physical distance of the two data centers.

14 **Question: Can I connect to all RTS servers at the same time?**

Answer: As stated in Section 2.1.12 in OMD-D Connectivity Guide (v1.15), Clients should only connect to one of the four RTS servers. Multiple concurrent connections are not allowed.

OMD Index datafeed related Questions

15 **Question: I am currently subscribing OMD Index datafeed in OMD-D production connections, what is the impact on me in this enhancement?**

Answer: There are two changes:

1) The RTS servers for OMD Index datafeed will be increased from two to four after the launch of OMD-C Resilience Enhancement scheduled for 12 April 2021; and

2) If there are missing ticks in OMD Index solely due to OMD-C (not because of the feed from the Index compiler), HKEX will send a Missing Index Report with all of the missing ticks by email at the end of the business day. The report format can be found in Section 6 in OMD-C Interface Specification.

Implementation Arrangement

16 **Question: When will I need to get my system ready for this enhancement?**

Answer: Clients should complete all development and testing work by 18 May 2021 for submitting the system impact and readiness declaration to HKEX.

17 **Question: What do I need to do?**

Answer: Clients should complete the following tasks:

Tasks	**Date**
Development and Testing	April – May 2021
Submit System Impact and Readiness Declaration Form (The link of the form will be provided in late April 2021)	By 18 May 2021
Participate in Market Rehearsal	Schedule to be further announced in May / Jun 2021