



CONNECTIVITY GUIDE

HKEX Orion Market Data Platform Derivatives Market Datafeed Products (OMD-D) – Derivatives Lite

Version 1.4
24 Jul 2018

DOCUMENT HISTORY

| Document Version | Date | Change Description | |
|------------------|-----------------|--|--|
| 1.0 | 26 October 2017 | First issue | |
| 1.1 | 17 January 2018 | Effective Date | Changes |
| | | 1 February 2018 | <ul style="list-style-type: none"> Section 2.2 – Add a new subsection for connectivity details for HAKTS Testing Environment |
| 1.2 | 13 March 2018 | Update Port assignment for E2E environment. | |
| 1.3 | 7 May 2018 | Effective Date | Changes |
| | | 15 May 2018 | <ul style="list-style-type: none"> Section 2.2 – Add connectivity details for HKATS Testing Environment for Changes to OMD-D for HKATS/DCASS Upgrade version Section 2.2.2 – Update port number from “51006” to “52006” for Channel 178 |
| 1.4 | 24 July 2018 | Effective Date | Changes |
| | | 24 July 2018 | <ul style="list-style-type: none"> Section 2.2 – Add connectivity details for HKATS Certification Test Environment (under Changes to OMD-D for HKATS/DCASS Upgrade version) Section 3.2.1 – Add the details of bandwidth allocation between multicast and unicast in production in each datafeed |

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Derivatives Market Datafeed Products (OMD-D) – Derivatives Lite

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1. Overview

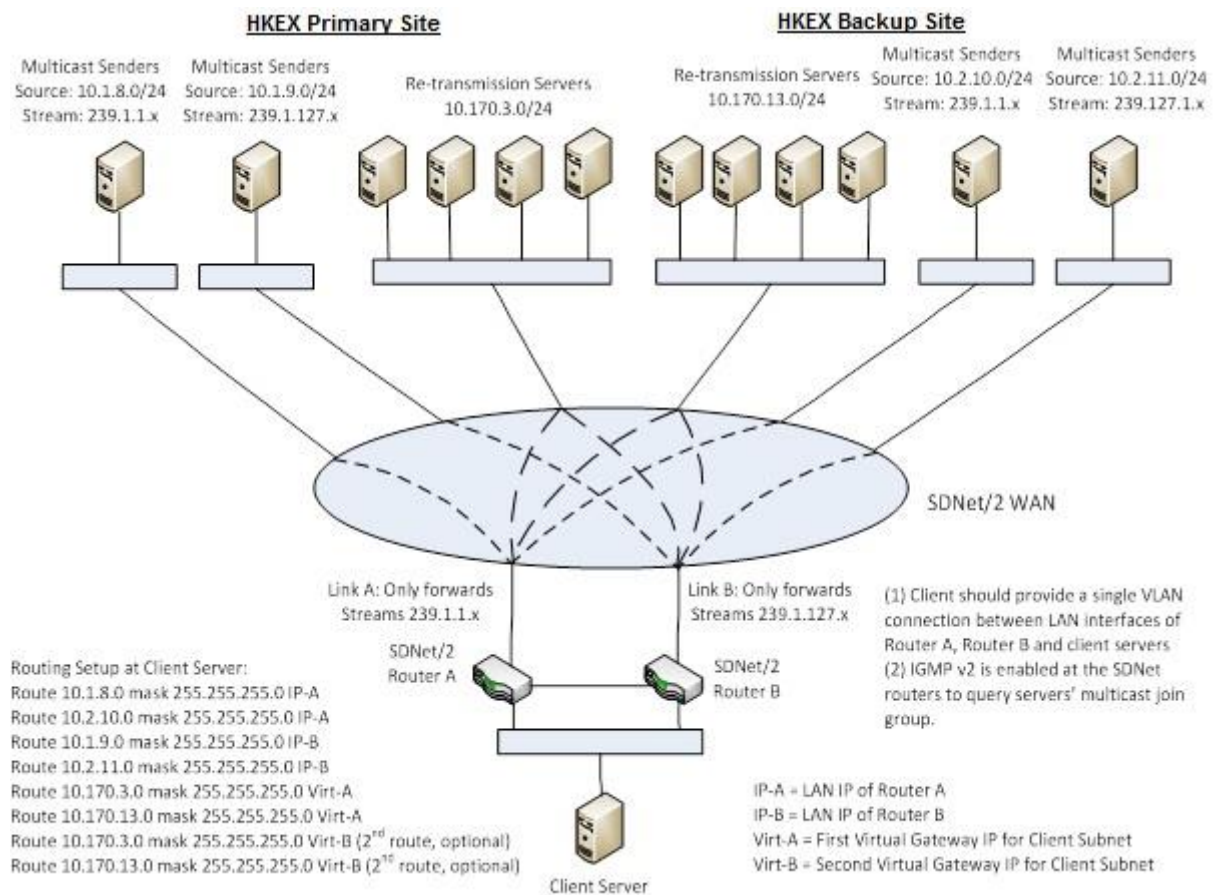
This document aims to provide network configuration information and guidance to assist information vendors and end-users (“clients”) in setting up their networks for making connection to OMD-D testing and production environments.

This document contains:

- Configuration information, i.e. IP addresses of the channels assigned for each of the OMD datafeed products in OMD Production environment and Readiness Test environment
- Guidelines / policies for SDNet/2 and HSN connection

2. Configuration Information

OMD adopts multicast transmission protocol for real-time data transmission with retransmission recovery service running on Unicast. Clients are required to set correct network configurations in order to establish proper connection to the corresponding OMD multicast server and retransmission server. Below is a sample connection diagram which provides an overview of SDNet/2 network connection to OMD for reference.



For OMD connection via SDNet/2, a client system has to set up routing to the HKEX host subnets as the diagram depicted. To receive multicast stream, IGMP version 2 is employed at the SDNet/2 routers to query the multicast groups which the client system subscribes. The client system should enable the IGMP function and issue join messages to the SDNet/2 routers for the entitled multicast groups.

For OMD connection by co-location at HKEX Host Data Centre (HDC), clients are required to provide their own routers to connect to the HKEX network. The protocols used in HDC network are BGP4 and Multicast PIM sparse mode. For details, please refer to the Interface Specification on Connectivity Services and Timing Service of HKEX Hosting or contact HKEX Hosting Services team via email hostingservices@hkex.com.hk.

Since the physical speed of an SDNet/2 circuit is 1Gbps, the interface of a client end LAN switch and the client end server has to be 1Gbps in order to prevent packet drops in case of multicast packet burst. To connect with SDNet/2 routers, interface of the LAN switch should be configured with speed as "auto-sense" and duplex mode as "auto-sense" and "auto-negotiation". Then, when the link comes up, the corresponding interface of the LAN switch should learn 1Gbps and full duplex.

The client systems are required to subscribe to the multicast addresses and port IDs for the subscribed OMD products according to multicast channel subscriptions as listed in Section 2.1 for production environment or as listed in Section 2.2 for Open/Readiness Test environment. Clients should not subscribe to other multicast addresses and port IDs not specified in this Connectivity Guide, otherwise it will result in receiving non OMD packets.

2.1 OMD-D Production Environment Connectivity Details

Note 1:

In OMD-D, partition assignment follows the exact arrangement in Genium. Market numbers 1 to 20 are assigned to Partition 1, and the market number above 20 are assigned to Partition 2.

| Partition Number | Markets ID |
|------------------|------------|
| 1 | 1 – 20 |
| 2 | 21 - 255 |

The above partitioning is subject to change by market operation development.

Note 2:

The below glossary applies to the following sections

| | |
|---------|------------------------------|
| SOM | Stock Option Market |
| Non-SOM | Non-Stock Option Market |
| EAS | Estimated Average Settlement |
| COP | Calculated Opening Price |

2.1.1 OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|----------------------------------|--------------------------------|--|--------------------------------|--|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 101 | A: 239.1.1.128:51001 B: 239.1.127.128:51001 | 603 | A: 239.1.1.154:51001 B: 239.1.127.154:51001 |
| | Combination Definition (305) | | | | |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 201 | A: 239.1.1.128:51002 B: 239.1.127.128:51002 | 703 | A: 239.1.1.154:51002 B: 239.1.127.154:51002 |
| | Combination Definition (305) | | | | |
| Derivatives Non-SOM Series Definition Reference Data Channel | Commodity Definition (301) | 151 | A: 239.1.1.128:51003 B: 239.1.127.128:51003 | 653 | A: 239.1.1.154:51003 B: 239.1.127.154:51003 |
| | Class Definition (302) | | | | |
| | Series Definition Extended (304) | | | | |
| Derivatives Non-SOM Series & Market Status Channel | Market Status (320) | 161 | A: 239.1.1.128:51004 B: 239.1.127.128:51004 | 663 | A: 239.1.1.154:51004 B: 239.1.127.154:51004 |
| | Series Status (321) | | | | |
| | Commodity Status (322) | | | | |
| Derivatives Non-SOM Quote Request Channel | Quote Request (336) | 164 | A: 239.1.1.128:51005 B: 239.1.127.128:51005 | | |
| Non-SOM Open Interest Channel | Open Interest (366) | 191 | A: 239.1.1.150:51000 B: 239.1.127.150:51000 | 696 | A: 239.1.1.178:51000 B: 239.1.127.178:51000 |

| | | | | | |
|--|---|-----|---|-----|--|
| Derivatives Non-SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) Aggregate Order Book Update (353) | 137 | A: 239.1.1.151:51001 B: 239.1.127.151:51001 | 637 | A: 239.1.1.176:51001 B: 239.1.127.176:51001 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) Aggregate Order Book Update (353) | 237 | A: 239.1.1.151:51002 B: 239.1.127.151:51002 | 737 | A: 239.1.1.176:51002 B: 239.1.127.176:51002 |
| Derivatives Non-SOM Trade Statistic Channel | Trade Statistic (360) | 179 | A: 239.1.1.151:51003 B: 239.1.127.151:51003 | 679 | A: 239.1.1.176:51003 B: 239.1.127.176:51003 |
| Derivatives Non-SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.144:51000 B: 239.1.127.144:51000 | 677 | A: 239.1.1.169:51000 B: 239.1.127.169:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.143:51000 B: 239.1.127.143:51000 | 699 | A: 239.1.1.168:51000 B: 239.1.127.168:51000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.144:51006 B: 239.1.127.144:51006 | | |

2.1.2 OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)

| | | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|---|--------------------------------|--|
| Multicast Service | Contents | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 102 | A: 239.1.1.133:51001 B: 239.1.127.133:51001 | 604 | A: 239.1.1.159:51001 B: 239.1.127.159:51001 |
| | Combination Definition (305) | | | | |
| Derivatives SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 202 | A: 239.1.1.133:51002 B: 239.1.127.133:51002 | 704 | A: 239.1.1.159:51002 B: 239.1.127.159:51002 |
| | Combination Definition (305) | | | | |
| Derivatives SOM Series Definition Reference Data Channel | Commodity Definition (301) | 152 | A: 239.1.1.133:51003 B: 239.1.127.133:51003 | 654 | A: 239.1.1.159:51003 B: 239.1.127.159:51003 |
| | Class Definition (302) | | | | |
| | Series Definition Extended (304) | | | | |
| Derivatives SOM Series & Market Status Channel | Market Status (320) | 162 | A: 239.1.1.133:51004 B: 239.1.127.133:51004 | 664 | A: 239.1.1.159:51004 B: 239.1.127.159:51004 |
| | Series Status (321) | | | | |
| | Commodity Status (322) | | | | |
| Derivatives SOM Quote Request Channel | Quote Request (336) | 165 | A: 239.1.1.133:51005 B: 239.1.127.133:51005 | | |
| SOM Open Interest Channel | Open Interest (366) | 192 | A: 239.1.1.149:51000 B: 239.1.127.149:51000 | 697 | A: 239.1.1.179:51000 B: 239.1.127.179:51000 |
| Derivatives SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 138 | A: 239.1.1.152:51001 B: 239.1.127.152:51001 | 638 | A: 239.1.1.177:51001 B: 239.1.127.177:51001 |
| | Aggregate Order Book Update (353) | | | | |
| Derivatives SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 238 | A: 239.1.1.152:51002 B: 239.1.127.152:51002 | 738 | A: 239.1.1.177:51002 B: 239.1.127.177:51002 |
| | Aggregate Order Book Update (353) | | | | |
| Derivatives SOM Trade Statistic Channel | Trade Statistic (360) | 180 | A: 239.1.1.152:51003 B: 239.1.127.152:51003 | 680 | A: 239.1.1.177:51003 B: 239.1.127.177:51003 |
| Derivatives SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.144:51000 B: 239.1.127.144:51000 | 677 | A: 239.1.1.169:51000 B: 239.1.127.169:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.143:51000 B: 239.1.127.143:51000 | 699 | A: 239.1.1.168:51000 B: 239.1.127.168:51000 |

| | | | |
|--------------------------------------|--------------------------------|-----|---|
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.144:51006 B: 239.1.127.144:51006 |
|--------------------------------------|--------------------------------|-----|---|

2.1.3 OMD Derivatives Lite – Order Feed (snapshot)

| Multicast Service | Contents | Snapshot Data Services | | Refresh Snapshot Data Services | |
|---|-----------------|------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Order Feed (Partition 1) Channel | Add Order (330) | 639 | A:239.1.1.180:51001 B:239.1.127.180:51001 | | |
| Derivatives Order Feed (Partition 2) Channel | Add Order (330) | 739 | A:239.1.1.180:51002 B:239.1.127.180:51002 | | |

2.1.4 OMD Derivatives Trade (Non-SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|---|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Trade Channel (Partition 1) | Trade (350) | 111 | A: 239.1.1.129:51001 B: 239.1.127.129:51001 | | |
| Derivatives Non-SOM Trade Channel (Partition 2) | Trade (350) | 211 | A: 239.1.1.129:51002 B: 239.1.127.129:51002 | | |
| Derivatives Non-SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 167 | A: 239.1.1.139:51000 B: 239.1.127.139:51000 | | |

2.1.5 OMD Derivatives Trade (SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|---|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Trade Channel (Partition 1) | Trade (350) | 112 | A: 239.1.1.134:51001 B: 239.1.127.134:51001 | | |
| Derivatives SOM Trade Channel (Partition 2) | Trade (350) | 212 | A: 239.1.1.134:51002 B: 239.1.127.134:51002 | | |
| Derivatives SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 168 | A: 239.1.1.140:51000 B: 239.1.127.140:51000 | | |

HKEX OMD Retransmission Unicast Connectivity

HKEX provides a Retransmission Service to its OMD clients to recover lost multicast packet. Functional details of the Retransmission Service are provided in the Interface Specification for Derivatives Lite (“D-Lite”). Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **OMD-D Production environment**.

| Retransmission Server | IP Unicast Address |
|----------------------------------|---------------------|
| Primary server in primary site | 10.170.3.121:55455 |
| Secondary server in primary site | 10.170.3.122:55455 |
| Primary server in DR site | 10.170.13.121:55455 |
| Secondary server in DR site | 10.170.13.122:55455 |

2.2 OMD-D Test Environment Connectivity Details

There are two OMD-D Test Environments available:

1. OMD-D Readiness Test Environment (“OMD-D RT Environment”)

- For OMD-D clients to perform OMD-D Readiness Test.

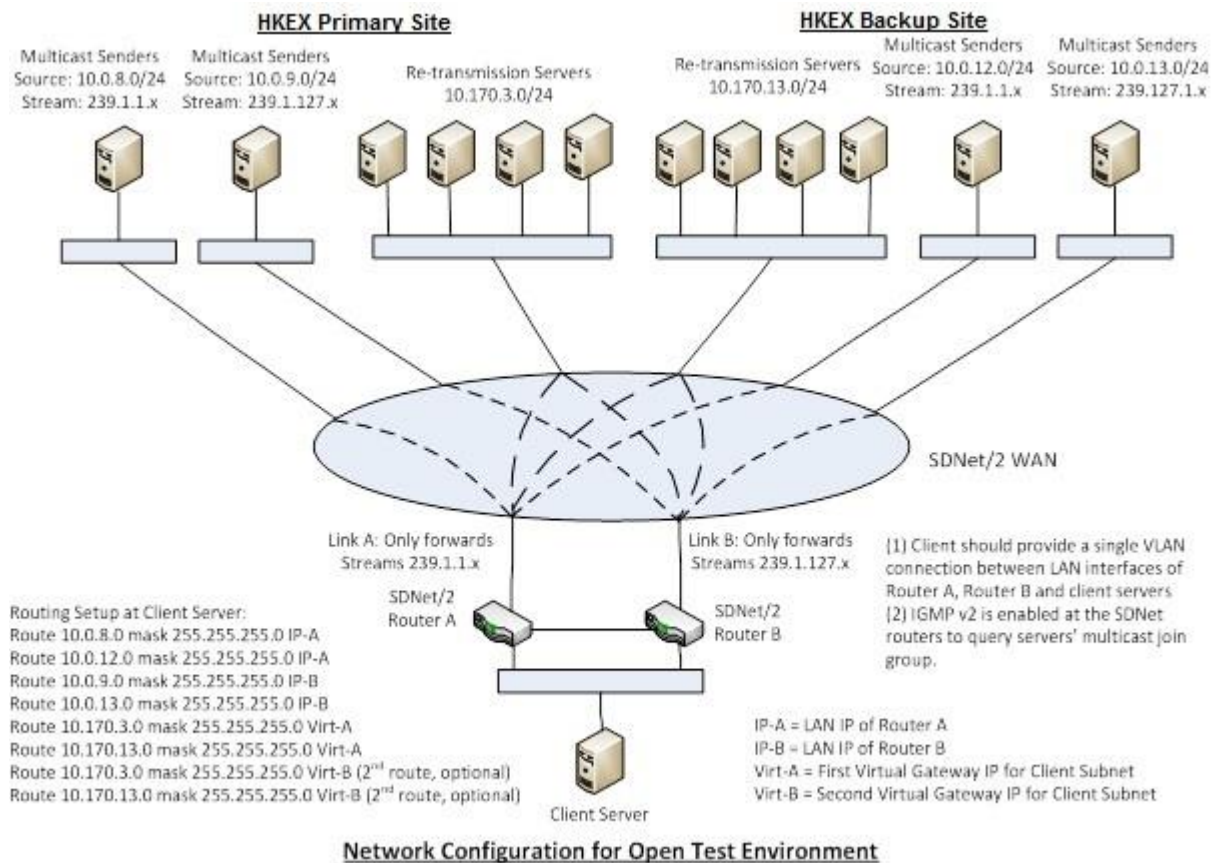
2. HKATS Testing Environment

- OMD-D is available in this environment to enable OMD-D EP clients to perform loop test with the HKATS, the HKEX Derivatives Market Trading System.

3. HKATS Certification Test Environment

- OMD-D is available in this environment to provide market data for EP clients to perform the certification test for HKATS, the HKEX Derivatives Market Trading System.

For OMD-D Test Environments, the network configuration is basically the same as the Production Environment described in session 2.1 except that the multicast source IP segments are 10.0.8.0/24, 10.0.9.0/24, 10.0.12.0/24 and 10.0.13.0/24. The diagram of the network is shown below:



2.2.1 OMD-D Readiness Test Environment

2.2.1.1 OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)

| | | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|---|--------------------------------|--|
| Multicast Service | Contents | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 101 | A: 239.1.1.180:51001 B: 239.1.127.180:51001 | 603 | A: 239.1.1.211:51051 B: 239.1.127.211:51051 |
| | Combination Definition (305) | | | | |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 201 | A: 239.1.1.180:51002 B: 239.1.127.180:51002 | 703 | A: 239.1.1.211:51052 B: 239.1.127.211:51052 |
| | Combination Definition (305) | | | | |
| Derivatives Non-SOM Series Definition Reference Data Channel | Commodity Definition (301) | 151 | A: 239.1.1.180:51003 B: 239.1.127.180:51003 | 653 | A: 239.1.1.211:51053 B: 239.1.127.211:51053 |
| | Class Definition (302) | | | | |
| | Series Definition Extended (304) | | | | |
| Derivatives Non-SOM Series & Market Status Channel | Market Status (320) | 161 | A: 239.1.1.180:51004 B: 239.1.127.180:51004 | 663 | A: 239.1.1.211:51054 B: 239.1.127.211:51054 |
| | Series Status (321) | | | | |
| | Commodity Status (322) | | | | |
| Derivatives Non-SOM Quote Request Channel | Quote Request (336) | 164 | A: 239.1.1.180:51005 B: 239.1.127.180:51005 | | |
| Non-SOM Open Interest Channel | Open Interest (366) | 191 | A: 239.1.1.189:51001 B: 239.1.127.189:51001 | 696 | A: 239.1.1.211:51055 B: 239.1.127.211:51055 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 137 | A: 239.1.1.190:51056 B: 239.1.127.190:51056 | 637 | A: 239.1.1.211:51056 B: 239.1.127.211:51056 |
| | Aggregate Order Book Update (353) | | | | |
| Derivatives Non-SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 237 | A: 239.1.1.190:51057 B: 239.1.127.190:51057 | 737 | A: 239.1.1.211:51057 B: 239.1.127.211:51057 |
| | Aggregate Order Book Update (353) | | | | |
| Derivatives Non-SOM Trade Statistic | Trade Statistic (360) | 179 | A: 239.1.1.190:51058 B: 239.1.127.190:51058 | 679 | A: 239.1.1.211:51058 B: 239.1.127.211:51058 |

| Channel | | | | | |
|---|--------------------------------|-----|---|-----|--|
| Derivatives Non-SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.194:51000 B: 239.1.127.194:51000 | 677 | A: 239.1.1.215:51000 B: 239.1.127.215:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.191:51000 B: 239.1.127.191:51000 | 699 | A: 239.1.1.212:51000 B: 239.1.127.212:51000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.194:51006 B: 239.1.127.194:51006 | | |

2.2.1.2 OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--|--------------------------------|---|--------------------------------|--|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) Combination Definition (305) | 102 | A:239.1.1.179:51001 B: 239.1.127.179:51001 | 604 | A: 239.1.1.209:51051 B: 239.1.127.209:51051 |
| Derivatives SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) Combination Definition (305) | 202 | A: 239.1.1.179:51002 B: 239.1.127.179:51002 | 704 | A: 239.1.1.209:51052 B: 239.1.127.209:51052 |
| Derivatives SOM Series Definition Reference Data Channel | Commodity Definition (301) Class Definition (302) Series Definition Extended (304) | 152 | A: 239.1.1.179:51003 B: 239.1.127.179:51003 | 654 | A: 239.1.1.209:51053 B: 239.1.127.209:51053 |
| Derivatives SOM Series & Market Status Channel | Market Status (320) Series Status (321) Commodity Status (322) | 162 | A: 239.1.1.179:51004 B: 239.1.127.179:51004 | 664 | A: 239.1.1.209:51054 B: 239.1.127.209:51054 |
| Derivatives SOM Quote Request Channel | Quote Request (336) | 165 | A: 239.1.1.179:51005 B: 239.1.127.179:51005 | | |
| SOM Open Interest Channel | Open Interest (366) | 192 | A: 239.1.1.187:51001 B: 239.1.127.187:51001 | 697 | A: 239.1.1.209:51055 B: 239.1.127.209:51055 |
| Derivatives SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) Aggregate Order Book Update (353) | 138 | A: 239.1.1.188:51056 B: 239.1.127.188:51056 | 638 | A: 239.1.1.209:51056 B: 239.1.127.209:51056 |
| Derivatives SOM Level 2 Price and | Calculated Opening Price (364) | 238 | A: 239.1.1.188:51057 B: | 738 | A: 239.1.1.209:51057 B: 239.1.127.209:51057 |

| | | | | | |
|--|-----------------------------------|-----|--|-----|--|
| COP (Partition 2) Channel | Aggregate Order Book Update (353) | | 239.1.127.188:51057 | | |
| Derivatives SOM Trade Statistic Channel | Trade Statistic (360) | 180 | A: 239.1.1.188:51058 B: 239.1.127.188:51058 | 680 | A: 239.1.1.209:51058 B: 239.1.127.209:51058 |
| Derivatives SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.194:51000 B: 239.1.127.194:51000 | 677 | A: 239.1.1.215:51000 B: 239.1.127.215:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.191:51000 B: 239.1.127.191:51000 | 699 | A: 239.1.1.212:51000 B: 239.1.127.212:51000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.194:51006 B: 239.1.127.194:51006 | | |

2.2.1.3 OMD Derivatives Lite – Order Feed (snapshot)

| Multicast Service | Contents | Snapshot Data Services | | Refresh Snapshot Data Services | |
|--|-----------------|------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Market Order Feed (Partition 1) Channel | Add Order (330) | 639 | A: 239.1.1.211:51059 B: 239.1.127.211:51059 | | |
| Derivatives Non-SOM Market Order Feed (Partition 2) Channel | Add Order (330) | 739 | A: 239.1.1.211:51060 B: 239.1.127.211:51060 | | |

2.2.1.4 OMD Derivatives Trade (non-SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|---|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Trade Channel (Partition 1) | Trade (350) | 111 | A:239.1.1.196:51001 B: 239.1.127.196:51001 | | |
| Derivatives Non-SOM Trade Channel (Partition 2) | Trade (350) | 211 | A:239.1.1.196:51002 B: 239.1.127.196:51002 | | |
| Derivatives Non-SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 167 | A:239.1.1.198:51000 B: 239.1.127.198:51000 | | |

2.2.1.5 OMD Derivatives Trade (SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Trade Channel (Partition 1) | Trade (350) | 112 | A: 239.1.1.195:51001 B: 239.1.127.195:51001 | | |
| Derivatives SOM Trade Channel (Partition 2) | Trade (350) | 212 | A: 239.1.1.195:51002 B: 239.1.127.195:51002 | | |
| Derivatives SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 168 | A: 239.1.1.197:51000 B: 239.1.127.197:51000 | | |

2.2.1.6 HKEX OMD Retransmission Unicast Connectivity

HKEX provides a Retransmission Service to its OMD clients to recover multicast packet loss. Functional details of the Retransmission Service are provided in the Interface Specification for D-Lite. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in the **OMD-D Readiness Test environment**.

| Retransmission Server | IP Unicast Address |
|---|---------------------|
| OMD-D at OMD-D RT Environment - for OMD-D Readiness Test | |
| Primary server in primary site | 10.170.3.141:55455 |
| Secondary server in primary site | 10.170.3.142:55455 |
| Primary server in DR site | 10.170.13.141:55455 |
| Secondary server in DR site | 10.170.13.142:55455 |

2.2.2 HKATS Testing Environment (Current Production Version)

2.2.2.1 OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)

| | | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|--|--------------------------------|--|
| Multicast Service | Contents | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 101 | A: 239.1.1.218:52001 | 603 | A: 239.1.1.249:52051 |
| | Combination Definition (305) | | B: 239.1.127.218:52001 | | B: 239.1.127.249:52051 |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 201 | A: 239.1.1.218:52002 | 703 | A: 239.1.1.249:52052 |
| | Combination Definition (305) | | B: 239.1.127.218:52002 | | B: 239.1.127.249:52052 |
| Derivatives Non-SOM Series Definition Reference Data Channel | Commodity Definition (301) | 151 | A: 239.1.1.218:52003 | 653 | A: 239.1.1.249:52053 |
| | Class Definition (302) | | B: 239.1.127.218:52003 | | B: 239.1.127.249:52053 |
| | Series Definition Extended (304) | | | | |
| Derivatives Non-SOM Series & Market Status Channel | Market Status (320) | 161 | A: 239.1.1.218:52004 | 663 | A: 239.1.1.249:52054 |
| | Series Status (321) | | B: 239.1.127.218:52004 | | B: 239.1.127.249:52054 |
| | Commodity Status (322) | | | | |
| Derivatives Non-SOM Quote Request Channel | Quote Request (336) | 164 | A: 239.1.1.218:52005 B: 239.1.127.218:52005 | | |
| Non-SOM Open Interest Channel | Open Interest (366) | 191 | A: 239.1.1.227:52001 B: 239.1.127.227:52001 | 696 | A: 239.1.1.249:52055 B: 239.1.127.249:52055 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 137 | A: 239.1.1.228:52056 | 637 | A: 239.1.1.249:52056 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:52056 | | B: 239.1.127.249:52056 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 237 | A: 239.1.1.228:52057 | 737 | A: 239.1.1.249:52057 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:52057 | | B: 239.1.127.249:52057 |
| Derivatives Non-SOM Trade Statistic | Trade Statistic (360) | 179 | A: 239.1.1.228:52058 | 679 | A: 239.1.1.249:52058 |
| | | | B: 239.1.127.228:52058 | | B: 239.1.127.249:52058 |

| Channel | | | | | |
|---|--------------------------------|-----|--------------------------|-----|--------------------------|
| Derivatives Non-SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:52000 | 677 | A: 239.1.1.253:52000 |
| | | | B: 239.1.1.127.232:52000 | | B: 239.1.1.127.253:52000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:52000 | 699 | A: 239.1.1.250:52000 |
| | | | B: 239.1.1.127.229:52000 | | B: 239.1.1.127.250:52000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:52006 | | |
| | | | B: 239.1.1.127.232:52006 | | |

2.2.2.2 OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|--|--------------------------------|--|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 102 | A: 239.1.1.217:52001 | 604 | A: 239.1.1.247:52051 |
| | Combination Definition (305) | | B: 239.1.1.127.217:52001 | | B: 239.1.1.127.247:52051 |
| Derivatives SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 202 | A: 239.1.1.217:52002 | 704 | A: 239.1.1.247:52052 |
| | Combination Definition (305) | | B: 239.1.1.127.217:52002 | | B: 239.1.1.127.247:52052 |
| Derivatives SOM Series Definition Reference Data Channel | Commodity Definition (301) | 152 | A: 239.1.1.217:52003 | 654 | A: 239.1.1.247:52053 |
| | Class Definition (302) | | B: 239.1.1.127.217:52003 | | B: 239.1.1.127.247:52053 |
| | Series Definition Extended (304) | | | | |
| Derivatives SOM Series & Market Status Channel | Market Status (320) | 162 | A: 239.1.1.217:52004 | 664 | A: 239.1.1.247:52054 |
| | Series Status (321) | | B: 239.1.1.127.217:52004 | | B: 239.1.1.127.247:52054 |
| | Commodity Status (322) | | | | |
| Derivatives SOM Quote Request Channel | Quote Request (336) | 165 | A: 239.1.1.217:52005 B: 239.1.1.127.217:52005 | | |
| SOM Open Interest Channel | Open Interest (366) | 192 | A: 239.1.1.225:52001 B: 239.1.1.127.225:52001 | 697 | A: 239.1.1.247:52055 B: 239.1.1.127.247:52055 |
| Derivatives SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 138 | A: 239.1.1.226:52056 | 638 | A: 239.1.1.247:52056 |
| | Aggregate Order Book Update (353) | | B: 239.1.1.127.226:52056 | | B: 239.1.1.127.247:52056 |
| Derivatives SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 238 | A: 239.1.1.226:52057 | 738 | A: 239.1.1.247:52057 |
| | Aggregate Order Book Update (353) | | B: 239.1.1.127.226:52057 | | B: 239.1.1.127.247:52057 |

| | | | | | |
|--|--------------------------------|-----|--|-----|--|
| Derivatives SOM Trade Statistic Channel | Trade Statistic (360) | 180 | A: 239.1.1.226:52058 B: 239.1.127.226:52058 | 680 | A: 239.1.1.247:52058 B: 239.1.127.247:52058 |
| Derivatives SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:52000 B: 239.1.127.232:52000 | 677 | A: 239.1.1.253:52000 B: 239.1.127.253:52000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:52000 B: 239.1.127.229:52000 | 699 | A: 239.1.1.250:52000 B: 239.1.127.250:52000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:52006 B: 239.1.127.232:52006 | | |

2.2.2.3 OMD Derivatives Lite – Order Feed (snapshot)

| Multicast Service | Contents | Snapshot Data Services | | Refresh Snapshot Data Services | |
|--|-----------------|------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Market Order Feed (Partition 1) Channel | Add Order (330) | 639 | A: 239.1.1.249:52059 B: 239.1.127.249:52059 | | |
| Derivatives Non-SOM Market Order Feed (Partition 2) Channel | Add Order (330) | 739 | A: 239.1.1.249:52060 B: 239.1.127.249:52060 | | |

2.2.2.4 OMD Derivatives Trade (non-SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Trade Channel (Partition 1) | Trade (350) | 111 | A: 239.1.1.234:52001 B: 239.1.127.234:52001 | | |
| Derivatives Non-SOM Trade Channel (Partition 2) | Trade (350) | 211 | A: 239.1.1.234:52002 B: 239.1.127.234:52002 | | |
| Derivatives Non-SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 167 | A: 239.1.1.236:52000 B: 239.1.127.236:52000 | | |

2.2.2.5 OMD Derivatives Trade (SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Trade Channel (Partition 1) | Trade (350) | 112 | A: 239.1.1.233:52001 B: 239.1.127.233:52001 | | |
| Derivatives SOM Trade Channel (Partition 2) | Trade (350) | 212 | A: 239.1.1.233:52002 B: 239.1.127.233:52002 | | |
| Derivatives SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 168 | A: 239.1.1.235:52000 B: 239.1.127.235:52000 | | |

2.2.2.6 HKEX OMD Retransmission Unicast Connectivity

HKEX provides a Retransmission Service to its OMD clients to recover multicast packet loss. Functional details of the Retransmission Service are provided in the Interface Specification for D-Lite. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in the **HKATS Testing environment under current production version**.

| | |
|---|--------------------|
| OMD-D at HKATS Testing Environment | |
| <i>for EPs to perform End-to-end Loop Test with HKATS</i> | |
| Primary server in primary site | 10.170.3.148:55455 |

2.2.3 HKATS Testing Environment (Changes to OMD-D for HKATS/DCASS Upgrade Version)

2.2.3.1 OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)

| | | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|--|--------------------------------|--|
| Multicast Service | Contents | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 101 | A: 239.1.1.218:51001 | 603 | A: 239.1.1.249:51051 |
| | Combination Definition (305) | | B: 239.1.127.218:51001 | | B: 239.1.127.249:51051 |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 201 | A: 239.1.1.218:51002 | 703 | A: 239.1.1.249:51052 |
| | Combination Definition (305) | | B: 239.1.127.218:51002 | | B: 239.1.127.249:51052 |
| Derivatives Non-SOM Series Definition Reference Data Channel | Commodity Definition (301) | 151 | A: 239.1.1.218:51003 | 653 | A: 239.1.1.249:51053 |
| | Class Definition (302) | | B: 239.1.127.218:51003 | | B: 239.1.127.249:51053 |
| | Series Definition Extended (304) | | | | |
| Derivatives Non-SOM Series & Market Status Channel | Market Status (320) | 161 | A: 239.1.1.218:51004 | 663 | A: 239.1.1.249:51054 |
| | Series Status (321) | | B: 239.1.127.218:51004 | | B: 239.1.127.249:51054 |
| | Commodity Status (322) | | | | |
| Derivatives Non-SOM Quote Request Channel | Quote Request (336) | 164 | A: 239.1.1.218:51005 B: 239.1.127.218:51005 | | |
| Non-SOM Open Interest Channel | Open Interest (366) | 191 | A: 239.1.1.227:51001 B: 239.1.127.227:51001 | 696 | A: 239.1.1.249:51055 B: 239.1.127.249:51055 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 137 | A: 239.1.1.228:51056 | 637 | A: 239.1.1.249:51056 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:51056 | | B: 239.1.127.249:51056 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 237 | A: 239.1.1.228:51057 | 737 | A: 239.1.1.249:51057 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:51057 | | B: 239.1.127.249:51057 |
| Derivatives Non-SOM Trade | Trade Statistic (360) | 179 | A: 239.1.1.228:51058 | 679 | A: 239.1.1.249:51058 |

| | | | | | |
|---|--------------------------------|-----|--|-----|--|
| Statistic | | | B: 239.1.127.228:51058 | | B: 239.1.127.249:51058 |
| Channel | | | | | |
| Derivatives Non-SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:51000 B: 239.1.127.232:51000 | 677 | A: 239.1.1.253:51000 B: 239.1.127.253:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:51000 B: 239.1.127.229:51000 | 699 | A: 239.1.1.250:51000 B: 239.1.127.250:51000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:51006 B: 239.1.127.232:51006 | | |

2.2.3.2 OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|--|--------------------------------|--|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 102 | A: 239.1.1.217:51001 B: 239.1.127.217:51001 | 604 | A: 239.1.1.247:51051 B: 239.1.127.247:51051 |
| | Combination Definition (305) | | | | |
| Derivatives SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 202 | A: 239.1.1.217:51002 B: 239.1.127.217:51002 | 704 | A: 239.1.1.247:51052 B: 239.1.127.247:51052 |
| | Combination Definition (305) | | | | |
| Derivatives SOM Series Definition Reference Data Channel | Commodity Definition (301) | 152 | A: 239.1.1.217:51003 B: 239.1.127.217:51003 | 654 | A: 239.1.1.247:51053 B: 239.1.127.247:51053 |
| | Class Definition (302) | | | | |
| | Series Definition Extended (304) | | | | |
| Derivatives SOM Series & Market Status Channel | Market Status (320) | 162 | A: 239.1.1.217:51004 B: 239.1.127.217:51004 | 664 | A: 239.1.1.247:51054 B: 239.1.127.247:51054 |
| | Series Status (321) | | | | |
| | Commodity Status (322) | | | | |
| Derivatives SOM Quote Request Channel | Quote Request (336) | 165 | A: 239.1.1.217:51005 B: 239.1.127.217:51005 | | |
| SOM Open Interest Channel | Open Interest (366) | 192 | A: 239.1.1.225:51001 B: 239.1.127.225:51001 | 697 | A: 239.1.1.247:51055 B: 239.1.127.247:51055 |
| Derivatives SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 138 | A: 239.1.1.226:51056 B: 239.1.127.226:51056 | 638 | A: 239.1.1.247:51056 B: 239.1.127.247:51056 |
| | Aggregate Order Book Update (353) | | | | |
| Derivatives SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 238 | A: 239.1.1.226:51057 B: 239.1.127.226:51057 | 738 | A: 239.1.1.247:51057 B: 239.1.127.247:51057 |
| | Aggregate Order Book | | | | |

| | | | | | |
|--|--------------------------------|-----|--|-----|--|
| Channel | Update (353) | | | | |
| Derivatives SOM Trade Statistic Channel | Trade Statistic (360) | 180 | A: 239.1.1.226:51058 B: 239.1.127.226:51058 | 680 | A: 239.1.1.247:51058 B: 239.1.127.247:51058 |
| Derivatives SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:51000 B: 239.1.127.232:51000 | 677 | A: 239.1.1.253:51000 B: 239.1.127.253:51000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:51000 B: 239.1.127.229:51000 | 699 | A: 239.1.1.250:51000 B: 239.1.127.250:51000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:51006 B: 239.1.127.232:51006 | | |

2.2.3.3 OMD Derivatives Lite – Order Feed (snapshot)

| Multicast Service | Contents | Snapshot Data Services | | Refresh Snapshot Data Services | |
|--|-----------------|------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Market Order Feed (Partition 1) Channel | Add Order (330) | 639 | A: 239.1.1.249:51059 B: 239.1.127.249:51059 | | |
| Derivatives Non-SOM Market Order Feed (Partition 2) Channel | Add Order (330) | 739 | A: 239.1.1.249:51060 B: 239.1.127.249:51060 | | |

2.2.3.4 OMD Derivatives Trade (non-SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Trade Channel (Partition 1) | Trade (350) | 111 | A: 239.1.1.234:51001 B: 239.1.127.234:51001 | | |
| Derivatives Non-SOM Trade Channel (Partition 2) | Trade (350) | 211 | A: 239.1.1.234:51002 B: 239.1.127.234:51002 | | |
| Derivatives Non-SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 167 | A: 239.1.1.236:51000 B: 239.1.127.236:51000 | | |

2.2.3.5 OMD Derivatives Trade (SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Trade Channel (Partition 1) | Trade (350) | 112 | A: 239.1.1.233:51001 B: 239.1.127.233:51001 | | |
| Derivatives SOM Trade Channel (Partition 2) | Trade (350) | 212 | A: 239.1.1.233:51002 B: 239.1.127.233:51002 | | |
| Derivatives SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 168 | A: 239.1.1.235:51000 B: 239.1.127.235:51000 | | |

2.2.3.6 HKEX OMD Retransmission Unicast Connectivity

HKEX provides a Retransmission Service to its OMD clients to recover multicast packet loss. Functional details of the Retransmission Service are provided in the Interface Specification for D-Lite. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in the **HKATS Testing environment under changes to OMD-D for HKATS/DCASS Upgrade version** .

| | |
|--|--------------------|
| OMD-D at HKATS Testing Environment - <i>for EPs to perform End-to-end Loop Test with HKATS</i> | |
| Primary server in primary site | 10.170.3.145:55455 |

2.2.4 HKATS Certification Test Environment (Changes to OMD-D for HKATS/DCASS Upgrade Version)

2.2.4.1 OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)

| | | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|-----------------------------------|--------------------------------|--|--------------------------------|--|
| Multicast Service | Contents | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) | 101 | A: 239.1.1.218:53001 | 603 | A: 239.1.1.249:53051 |
| | Combination Definition (305) | | B: 239.1.127.218:53001 | | B: 239.1.127.249:53051 |
| Derivatives Non-SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) | 201 | A: 239.1.1.218:53002 | 703 | A: 239.1.1.249:53052 |
| | Combination Definition (305) | | B: 239.1.127.218:53002 | | B: 239.1.127.249:53052 |
| Derivatives Non-SOM Series Definition Reference Data Channel | Commodity Definition (301) | 151 | A: 239.1.1.218:53003 | 653 | A: 239.1.1.249:53053 |
| | Class Definition (302) | | B: 239.1.127.218:53003 | | B: 239.1.127.249:53053 |
| | Series Definition Extended (304) | | | | |
| Derivatives Non-SOM Series & Market Status Channel | Market Status (320) | 161 | A: 239.1.1.218:53004 | 663 | A: 239.1.1.249:53054 |
| | Series Status (321) | | B: 239.1.127.218:53004 | | B: 239.1.127.249:53054 |
| | Commodity Status (322) | | | | |
| Derivatives Non-SOM Quote Request Channel | Quote Request (336) | 164 | A: 239.1.1.218:53005 B: 239.1.127.218:53005 | | |
| Non-SOM Open Interest Channel | Open Interest (366) | 191 | A: 239.1.1.227:53001 B: 239.1.127.227:53001 | 696 | A: 239.1.1.249:53055 B: 239.1.127.249:53055 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) | 137 | A: 239.1.1.228:53056 | 637 | A: 239.1.1.249:53056 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:53056 | | B: 239.1.127.249:53056 |
| Derivatives Non-SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) | 237 | A: 239.1.1.228:53057 | 737 | A: 239.1.1.249:53057 |
| | Aggregate Order Book Update (353) | | B: 239.1.127.228:53057 | | B: 239.1.127.249:53057 |
| Derivatives Non-SOM Trade | Trade Statistic (360) | 179 | A: 239.1.1.228:53058 | 679 | A: 239.1.1.249:53058 |

| | | | | | |
|---|--------------------------------|-----|--|-----|--|
| Statistic | | | B: 239.1.127.228:53058 | | B: 239.1.127.249:53058 |
| Channel | | | | | |
| Derivatives Non-SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:53000 B: 239.1.127.232:53000 | 677 | A: 239.1.1.253:53000 B: 239.1.127.253:53000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:53000 B: 239.1.127.229:53000 | 699 | A: 239.1.1.250:53000 B: 239.1.127.250:53000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:53006 B: 239.1.127.232:53006 | | |

2.2.4.2 OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--|--------------------------------|--|--------------------------------|--|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Series Definition Reference Data Channel (Partition 1) | Series Definition Base (303) Combination Definition (305) | 102 | A: 239.1.1.217:53001 B: 239.1.127.217:53001 | 604 | A: 239.1.1.247:53051 B: 239.1.127.247:53051 |
| Derivatives SOM Series Definition Reference Data Channel (Partition 2) | Series Definition Base (303) Combination Definition (305) | 202 | A: 239.1.1.217:53002 B: 239.1.127.217:53002 | 704 | A: 239.1.1.247:53052 B: 239.1.127.247:53052 |
| Derivatives SOM Series Definition Reference Data Channel | Commodity Definition (301) Class Definition (302) Series Definition Extended (304) | 152 | A: 239.1.1.217:53003 B: 239.1.127.217:53003 | 654 | A: 239.1.1.247:53053 B: 239.1.127.247:53053 |
| Derivatives SOM Series & Market Status Channel | Market Status (320) Series Status (321) Commodity Status (322) | 162 | A: 239.1.1.217:53004 B: 239.1.127.217:53004 | 664 | A: 239.1.1.247:53054 B: 239.1.127.247:53054 |
| Derivatives SOM Quote Request Channel | Quote Request (336) | 165 | A: 239.1.1.217:53005 B: 239.1.127.217:53005 | | |
| SOM Open Interest Channel | Open Interest (366) | 192 | A: 239.1.1.225:53001 B: 239.1.127.225:53001 | 697 | A: 239.1.1.247:53055 B: 239.1.127.247:53055 |
| Derivatives SOM Level 2 Price and COP (Partition 1) Channel | Calculated Opening Price (364) Aggregate Order Book Update (353) | 138 | A: 239.1.1.226:53056 B: 239.1.127.226:53056 | 638 | A: 239.1.1.247:53056 B: 239.1.127.247:53056 |
| Derivatives SOM Level 2 Price and COP (Partition 2) Channel | Calculated Opening Price (364) Aggregate Order Book | 238 | A: 239.1.1.226:53057 B: 239.1.127.226:53057 | 738 | A: 239.1.1.247:53057 B: 239.1.127.247:53057 |

| | | | | | |
|--|--------------------------------|-----|--|-----|--|
| Channel | Update (353) | | | | |
| Derivatives SOM Trade Statistic Channel | Trade Statistic (360) | 180 | A: 239.1.1.226:53058 B: 239.1.127.226:53058 | 680 | A: 239.1.1.247:53058 B: 239.1.127.247:53058 |
| Derivatives SOM Market Alert Channel | Market Alert (323) | 177 | A: 239.1.1.232:53000 B: 239.1.127.232:53000 | 677 | A: 239.1.1.253:53000 B: 239.1.127.253:53000 |
| EAS Channel | EAS Price (365) | 199 | A: 239.1.1.229:53000 B: 239.1.127.229:53000 | 699 | A: 239.1.1.250:53000 B: 239.1.127.250:53000 |
| Derivatives DR Signal Channel | Disaster Recovery Signal (105) | 178 | A: 239.1.1.232:53006 B: 239.1.127.232:53006 | | |

2.2.4.3 OMD Derivatives Lite – Order Feed (snapshot)

| Multicast Service | Contents | Snapshot Data Services | | Refresh Snapshot Data Services | |
|--|-----------------|------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Market Order Feed (Partition 1) Channel | Add Order (330) | 639 | A: 239.1.1.249:53059 B: 239.1.127.249:53059 | | |
| Derivatives Non-SOM Market Order Feed (Partition 2) Channel | Add Order (330) | 739 | A: 239.1.1.249:53060 B: 239.1.127.249:53060 | | |

2.2.4.4 OMD Derivatives Trade (non-SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|--|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives Non-SOM Trade Channel (Partition 1) | Trade (350) | 111 | A: 239.1.1.234:53001 B: 239.1.127.234:53001 | | |
| Derivatives Non-SOM Trade Channel (Partition 2) | Trade (350) | 211 | A: 239.1.1.234:53002 B: 239.1.127.234:53002 | | |
| Derivatives Non-SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 167 | A: 239.1.1.236:53000 B: 239.1.127.236:53000 | | |

2.2.4.5 OMD Derivatives Trade (SOM) (streaming)

| Multicast Service | Contents | Real-time Market Data Services | | Refresh Snapshot Data Services | |
|---|--------------------------------------|--------------------------------|--|--------------------------------|---------------------------------|
| | | Channel ID | Multicast Channel Subscriptions | Channel ID | Multicast Channel Subscriptions |
| Derivatives SOM Trade Channel (Partition 1) | Trade (350) | 112 | A: 239.1.1.233:53001 B: 239.1.127.233:53001 | | |
| Derivatives SOM Trade Channel (Partition 2) | Trade (350) | 212 | A: 239.1.1.233:53002 B: 239.1.127.233:53002 | | |
| Derivatives SOM Trade Adjustment Channel | Trade (350) Trade Amendment (356) | 168 | A: 239.1.1.235:53000 B: 239.1.127.235:53000 | | |

2.2.4.6 HKEX OMD Retransmission Unicast Connectivity

HKEX provides a Retransmission Service to its OMD clients to recover multicast packet loss. Functional details of the Retransmission Service are provided in the Interface Specification for D-Lite. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in the **HKATS Certification Test environment under changes to OMD-D for HKATS/DCASS Upgrade version** .

**OMD-D at HKATS Certification Test Environment
- for EPs to perform HKATS Certification Test**

| | |
|--------------------------------|--------------------|
| Primary server in primary site | 10.170.3.139:55455 |
|--------------------------------|--------------------|

2.3 Individual Client Configuration Details

Individual clients will be provided with the following configuration details for each set of product feed subscription:

- One Retransmission User ID (Username)
- The subnet and subnet mask of the client segment
- Two unicast client allowable IP addresses for connection with retransmission servers
- Two physical IP addresses and two Virtual IP address of SDNet/2 routers
- HSRP/VRRP groups used by SDNet/2 routers

Individual client testing configuration information will be provided separately prior to the Readiness Test whilst the client specific production configuration information will be provided upon the client's successful completion of the Readiness Test and prior to the Market Rehearsals/Post Release Test. Please refer to Appendix B for an example of Client Configuration information.

3. Guidelines on SDNet/2 lines / HSN connection

3.1 Mode of OMD connection

- For resilience purpose, at least 2 SDNet/2 or HSN lines are required for OMD connection either for individual OMD datafeed product or sharing among different OMD datafeed products.
- The set of 2 SDNet/2 lines is required to locate in the same location. If clients require receiving OMD data in multiple locations, 1 set of 2 SDNet/2 lines is required to install in each location.

3.2 Bandwidth Requirement

The estimated bandwidth requirements of Derivatives Lite and Derivatives Trade are as follows.

3.2.1 Production SDNet/2 / HSN and Testing SDNet/2 / HSN for OMD-D Readiness Test

| Datafeed | Non-SOM | SOM | Non-SOM + SOM |
|--|---------|--------|---------------|
| Derivatives Lite (“D-Lite”) – Price Depth Feed | 6 Mbps | 8 Mbps | 14 Mbps |
| Derivatives Lite (“D-Lite”) – Order Feed | 3 Mbps | | |
| Derivatives Trade (“DT”) | 2 Mbps | 2 Mbps | 2 Mbps |

Production Bandwidth Allocation Between Multicast and Unicast in Each Datafeed

| Datafeed | Total | Multicast (i.e. Real Time & Refresh) | Unicast (i.e. Retransmission) |
|------------------|--------|--------------------------------------|-------------------------------|
| D-Lite – Non-SOM | 6 Mbps | 5.5 Mbps | 0.5 Mbps |
| D-Lite – SOM | 8 Mbps | 7.5 Mbps | 0.5 Mbps |

3.2.2 Testing SDNet/2 / HSN for OMD-D HKATS Testing Environment and HKATS Certification Test Environment

| Datafeed | Non-SOM | SOM | Non-SOM + SOM |
|--|------------|------------|---------------|
| Derivatives Lite (“D-Lite”) – Price Depth Feed | 1 Mbps | 3 Mbps | 4 Mbps |
| Derivatives Lite (“D-Lite”) – Order Feed | 3 Mbps | | |
| Derivatives Trade (“DT”) | Negligible | Negligible | Negligible |

3.3 Sharing of SDNet/2 lines or HSN port set

Clients may opt to use separated sets or same set of SDNet/2 lines/ HSN ports for receiving data of different OMD datafeed products and other HKEX datafeeds, e.g. CG subject to certain limitations.

Under the current multicast transmission protocol of OMD, clients are required to establish live-live connections regardless of whether they are connecting through SDNet/2 or HSN Port in HKEX's Hosting site.

Sharing of SDNet/2 lines for different OMD datafeed products and other applications, e.g. CG is allowed and clients are required to make sure the bandwidth of the SDNet/2 lines is sufficient to support the multiple applications sharing the lines and they are aware of the potential issues for sharing of lines.

Under the Hosting setup, 1 HSN Port Set contains 2 ports which can serve the live-live connections for OMD (multicast application) and live-backup connection for other unicast application, e.g. CG.

Clients who would like to establish new HSN connection for other unicast applications which are in live-live mode may need to apply for an additional set of HSN circuits, or consider another solution that meets the same resilience requirement.

In addition, clients should note the following policies on sharing of SDNet/2 or HSN lines for OMD datafeed products:

- Sharing of same set of production SDNet/2 / HSN circuits for **more than 1 OMD datafeed products of different markets** (i.e. securities market datafeed and derivatives market datafeed) **is allowed**.
- Sharing of the same SDNet/2 / HSN circuits for both product and testing purposes is **NOT ALLOWED**.
- **Exchange Participants** who would like to **share the same SDNet/2 circuits with trading traffic (orders and trades) and market data traffic** are however **only** allowed to do so if all the traffic **on** the circuits belongs to **the same market** (i.e. either securities market or derivatives market). For example, Exchange Participants of derivatives market may use the same SDNet/2 circuits for their access to OMD-D D-Lite and HKATS CG.
- Clients should note and consider the followings if they are going to adopt shared line mode:
 - i) In case of failure/interruption of the shared circuits, all datafeed products using this set of circuits will be affected.
 - ii) Troubleshooting for network related issues (e.g. performance, latency or packet loss etc.) will be much more difficult and time consuming and assistance from network carriers and HKEX will be limited in such troubleshooting. Clients must accept this risk in making the line sharing decision.
 - iii) Due to the difference in operating hours and testing windows between securities and derivatives markets, clients should make sure any maintenance/testing of one of the systems does not affect the rest of the systems sharing the same set of circuits.

3.4 Bandwidth for shared SDNet/2 lines or HSN port set

- i) Shared SDNet/2 / HSN circuits must have sufficient bandwidth to support the data transmission of multiple products/devices. Please see below examples for reference:

Example: Sharing of a set of SDNet/2 lines for OMD D-Lite, CG:-
The estimated bandwidth requirements for all feeds under OMD D-Lite and CG are 17Mbps and 10Mbps respectively. The bandwidth for the common set of SDNet/2

lines will therefore be 30Mbps (minimum incremental bandwidth threshold is 10Mbps for SDNet/2 lines of 10Mbps-100Mbps)

- ii) Clients can allocate bandwidth of the shared lines to different products as they wish as long as the bandwidth allocated to each datafeed product meets the estimated bandwidth requirement specified by HKEX.

4. Other Guidelines on OMD Connections

4.1 Installation of SDNet/2 and HSN lines

4.1.1 *SDNet/2 lines*

Clients are required to contact the SDNet/2 Accredited Vendors for installation of SDNet/2 lines for OMD connection. Details of the SDNet/2 Accredited Vendors and reference costs charged by different SDNet/2 Accredited Vendors can be found in Appendix A.

4.1.2 *HSN lines*

Clients who will use HKEX's Hosting Service for OMD connection should contact our Hosting Service team directly for details on the HSN lines.

Appendix A – SDNet/2 Accredited Vendors Information

SDNet/2 services are provided by Accredited Vendors for the provision of circuits from EP/CP/IV/ASP locations to HKEX's data centres.

To become an Accredited Vendor, the Vendor's SDNet/2 service must comply with the technical requirements set out by HKEX. The compliance of these technical requirements ensures the Accredited Vendor will deliver a stable, reliable and high quality networking services to the EPs/CPs/IVs/ASPs.

Three Accredited Vendors have been selected and accredited to provide SDNet/2 network services. These vendors are (in alphabetical order):

- Hong Kong Telecommunications (HKT) Limited (also known as PCCW)
- Hutchison Global Communications Limited (HGC)
- WTT HK Limited (WTT)

For details of SDNet/2 circuit price information / technical specification / service level, please refer to [Securities and Derivatives Network \(SDNet/2\)](#) posted on HKEX website.

Appendix B Sample Client Configuration Information

Client End Network Information (Sample):

| | | |
|----|--|---------------------------------|
| 1 | Username | CLIENT1 |
| 2 | OMD LAN Subnet | 10.55.64.0 |
| 3 | OMD LAN Subnet Mask | 255.255.255.224 |
| 4 | Vendor Allowable IP Address 1 for retransmission | 10.55.64.2 |
| 5 | Vendor Allowable IP Address 2 for retransmission | 10.55.64.29 |
| 6 | SDNet/2 Primary Circuit Number | 808311 |
| 7 | SDNet/2 Router A LAN IP Address (IP-A) | 10.55.64.14 |
| 8 | SDNet/2 Secondary Circuit Number | 808312 |
| 9 | SDNet/2 Router B LAN IP Address (IP-B) | 10.55.64.17 |
| 10 | SDNet/2 OMD LAN 1 st Virtual Gateway IP Address (Virt-A) | 10.55.64.1 |
| 11 | HSRP/VRRP Group Number used by SDNet/2 Router for Virt-A | 14 |
| 12 | SDNet/2 OMD LAN 2 nd Virtual Gateway IP Address (Virt-B) | 10.55.64.30 |
| 13 | HSRP/VRRP Group Number used by SDNet/2 Router for Virt-B | 17 |
| 14 | Multicast Protocol used by SDNet/2 Routers | IGMPv2 |
| 15 | SDNet/2 Router Physical Interface for OMD | gi1/0/1 |
| 16 | SDNet/2 Router Port Speed for OMD | Auto Sense up to 1Gbps |
| 17 | SDNet/2 Router Port Duplex Mode for OMD | Auto Negotiation |
| 18 | IP address ranges usable by Vendors (IP addresses outside these ranges are used and reserved by HKEX) | 10.55.64.9-13 10.55.64.18-22 |
| | Note: Vendors can use same set of addresses for Unicast retransmission for the multicast transmission) | |

Host End Network Information (Sample):

| | | |
|----|--|------------------|
| 1 | Multicast Source Segment of Stream A in Primary Site forwarded by Vendor SDNet/2 Router A | 10.0.8.0/24 |
| 2 | Multicast Source Segment of Stream A in Backup Site forwarded by Vendor SDNet/2 Router A | 10.0.10.0/24 |
| 3 | Multicast Source Segment for multicast stream B in Primary Site forwarded by Vendor SDNet/2 Router B | 10.0.9.0/24 |
| 4 | Multicast Source Segment for multicast stream B in Backup Site forwarded by Vendor SDNet/2 Router B | 10.0.11.0/24 |
| 5 | Primary Site Primary Retransmission Server IP Address | 10.170.3.121/24 |
| 6 | Primary Site Primary Retransmission Server TCP Port Number | 55455 |
| 7 | Primary Site Secondary Retransmission Server IP Address | 10.170.3.122/24 |
| 8 | Primary Site Secondary Retransmission Server TCP Port Number | 55455 |
| 9 | Backup Site Primary Retransmission Server IP Address | 10.170.13.121/24 |
| 10 | Backup Site Primary Retransmission Server TCP Port Number | 55455 |
| 11 | Backup Site Secondary Retransmission Server IP Address | 10.170.13.122/24 |
| 12 | Backup Site Secondary Retransmission Server TCP Port Number | 55455 |

