



# CONNECTIVITY GUIDE

## **HKEX Orion Market Data Platform OMD-D Connectivity Guide**

Version 2.2  
10 August 2026

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## 1. Overview

The target readers of this document are the technical personnel of Market Data Vendors, End-Users, Application Service Providers (“ASPs”) and Independent Software Vendors (“ISVs”) of HKEX Orion Market Data Platform – Derivatives Market (“OMD-D”).

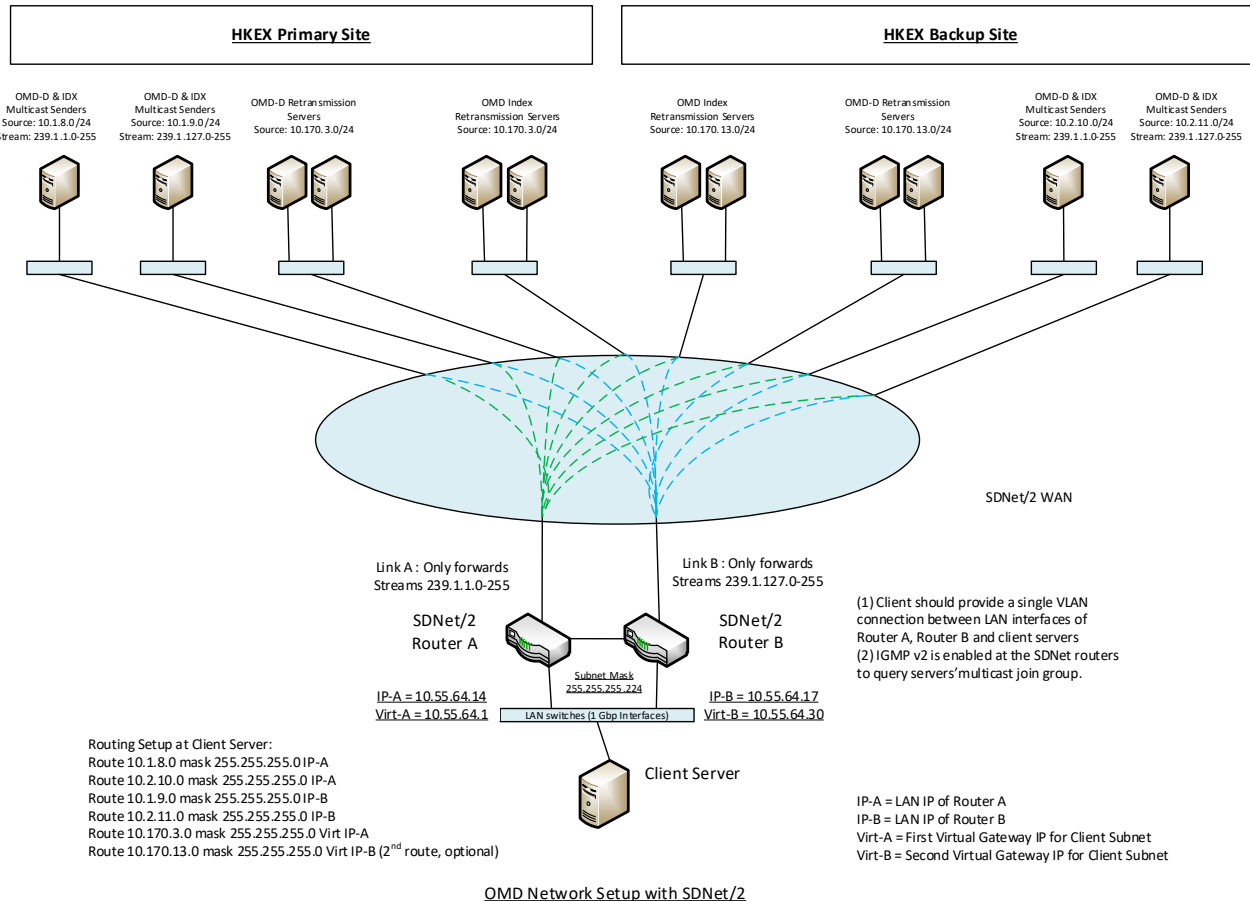
This document aims to provide network configuration information and guidance to assist clients in setting up their networks for making connection to OMD-D testing and production environments.

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 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](mailto: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 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.

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### 2.1 OMD-D Production Environment Connectivity Details

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Note 1 :

OMD-D assign an independent partition for each ODP matching engine. There are 6 matching engines at initial stage. More partitions may assign for market expansion.

The partition assignment will be provided in a later version in due course..

Note 2:

The below glossary applies to the following sections

|         |                          |
|---------|--------------------------|
| SOM     | Stock Option Market      |
| Non-SOM | Non-Stock Option Market  |
| COP     | Calculated Opening Price |

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

| Channel Names and Messages |                                                                                                                            |             |            | Production (D-Lite Non-SOM) |                          |              |            |                          |                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------|-----------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID | Real Time Channels          |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                            |             |            | Line A Multicast Address    | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001       | 239.1.1.128                 | 239.1.127.128            | 51101        | 1901       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 2           | 2001       | 239.1.1.128                 | 239.1.127.128            | 51201        | 2901       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 3           | 3001       | 239.1.1.128                 | 239.1.127.128            | 51301        | 3901       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 4           | 4001       | 239.1.1.128                 | 239.1.127.128            | 51401        | 4901       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 5           | 5001       | 239.1.1.128                 | 239.1.127.128            | 51501        | 5901       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 6           | 6001       | 239.1.1.128                 | 239.1.127.128            | 51601        | 6901       | 239.1.1.154              | 239.1.127.154            |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004       | 239.1.1.150                 | 239.1.127.150            | 51100        | 1904       | 239.1.1.178              | 239.1.127.178            |
|                            |                                                                                                                            | 2           | 2004       | 239.1.1.150                 | 239.1.127.150            | 51200        | 2904       | 239.1.1.178              | 239.1.127.178            |
|                            |                                                                                                                            | 3           | 3004       | 239.1.1.150                 | 239.1.127.150            | 51300        | 3904       | 239.1.1.178              | 239.1.127.178            |
|                            |                                                                                                                            | 4           | 4004       | 239.1.1.150                 | 239.1.127.150            | 51400        | 4904       | 239.1.1.178              | 239.1.127.178            |
|                            |                                                                                                                            | 5           | 5004       | 239.1.1.150                 | 239.1.127.150            | 51500        | 5904       | 239.1.1.178              | 239.1.127.178            |
|                            |                                                                                                                            | 6           | 6004       | 239.1.1.150                 | 239.1.127.150            | 51600        | 6904       | 239.1.1.178              | 239.1.127.178            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010       | 239.1.1.128                 | 239.1.127.128            | 51102        | 1910       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 2           | 2010       | 239.1.1.128                 | 239.1.127.128            | 51202        | 2910       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 3           | 3010       | 239.1.1.128                 | 239.1.127.128            | 51302        | 3910       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 4           | 4010       | 239.1.1.128                 | 239.1.127.128            | 51402        | 4910       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 5           | 5010       | 239.1.1.128                 | 239.1.127.128            | 51502        | 5910       | 239.1.1.154              | 239.1.127.154            |
|                            |                                                                                                                            | 6           | 6010       | 239.1.1.128                 | 239.1.127.128            | 51602        | 6910       | 239.1.1.154              | 239.1.127.154            |
| Quote Request              | Quote Request (336)                                                                                                        | 1           | 1019       | 239.1.1.128                 | 239.1.127.128            | 51104        |            |                          |                          |
|                            |                                                                                                                            | 2           | 2019       | 239.1.1.128                 | 239.1.127.128            | 51204        |            |                          |                          |
|                            |                                                                                                                            | 3           | 3019       | 239.1.1.128                 | 239.1.127.128            | 51304        |            |                          |                          |
|                            |                                                                                                                            | 4           | 4019       | 239.1.1.128                 | 239.1.127.128            | 51404        |            |                          |                          |
|                            |                                                                                                                            | 5           | 5019       | 239.1.1.128                 | 239.1.127.128            | 51504        |            |                          |                          |

## OMD-D Connectivity Guide

| Channel Names and Messages                |                                               |   | Production (D-Lite Non-SOM) |             |               |       |      |             |               |
|-------------------------------------------|-----------------------------------------------|---|-----------------------------|-------------|---------------|-------|------|-------------|---------------|
|                                           |                                               | 6 | 6019                        | 239.1.1.128 | 239.1.127.128 | 51604 |      |             |               |
| <b>Level 2 Price and COP (Compressed)</b> | COP (364)<br>Aggregate OrderBook update (353) | 1 | 1032                        | 239.1.1.151 | 239.1.127.151 | 51100 | 1532 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 2 | 2032                        | 239.1.1.151 | 239.1.127.151 | 51200 | 2532 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 3 | 3032                        | 239.1.1.151 | 239.1.127.151 | 51300 | 3532 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 4 | 4032                        | 239.1.1.151 | 239.1.127.151 | 51400 | 3532 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 5 | 5032                        | 239.1.1.151 | 239.1.127.151 | 51500 | 3532 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 6 | 6032                        | 239.1.1.151 | 239.1.127.151 | 51600 | 3532 | 239.1.1.176 | 239.1.127.176 |
| <b>Statistic</b>                          | Trade Statistic (360)                         | 1 | 1044                        | 239.1.1.151 | 239.1.127.151 | 51101 | 1544 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 2 | 2044                        | 239.1.1.151 | 239.1.127.151 | 51201 | 2544 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 3 | 3044                        | 239.1.1.151 | 239.1.127.151 | 51301 | 3544 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 4 | 4044                        | 239.1.1.151 | 239.1.127.151 | 51401 | 4544 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 5 | 5044                        | 239.1.1.151 | 239.1.127.151 | 51501 | 5544 | 239.1.1.176 | 239.1.127.176 |
|                                           |                                               | 6 | 6044                        | 239.1.1.151 | 239.1.127.151 | 51601 | 6544 | 239.1.1.176 | 239.1.127.176 |
| <b>Market Alert</b>                       | Market Alert (323)                            | 1 | 1049                        | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 2 | 2049                        | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 3 | 3049                        | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 4 | 4049                        | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 5 | 5049                        | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 6 | 6049                        | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| <b>DR Signal</b>                          | Disaster Recovery Signal (105)                | - | 1088                        | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |

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

| Channel Names and Messages |                                                                                                                            |             |            | Production (D-Lite SOM)  |                          |              |            |                          |                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                            |             |            | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002       | 239.1.1.133              | 239.1.127.133            | 51101        | 1902       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 2           | 2002       | 239.1.1.133              | 239.1.127.133            | 51201        | 2902       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 3           | 3002       | 239.1.1.133              | 239.1.127.133            | 51301        | 3902       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 4           | 4002       | 239.1.1.133              | 239.1.127.133            | 51401        | 4902       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 5           | 5002       | 239.1.1.133              | 239.1.127.133            | 51501        | 5902       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 6           | 6002       | 239.1.1.133              | 239.1.127.133            | 51601        | 6902       | 239.1.1.159              | 239.1.127.159            |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005       | 239.1.1.149              | 239.1.127.149            | 51100        | 1905       | 239.1.1.179              | 239.1.127.179            |
|                            |                                                                                                                            | 2           | 2005       | 239.1.1.149              | 239.1.127.149            | 51200        | 2905       | 239.1.1.179              | 239.1.127.179            |
|                            |                                                                                                                            | 3           | 3005       | 239.1.1.149              | 239.1.127.149            | 51300        | 3905       | 239.1.1.179              | 239.1.127.179            |
|                            |                                                                                                                            | 4           | 4005       | 239.1.1.149              | 239.1.127.149            | 51400        | 4905       | 239.1.1.179              | 239.1.127.179            |
|                            |                                                                                                                            | 5           | 5005       | 239.1.1.149              | 239.1.127.149            | 51500        | 5905       | 239.1.1.179              | 239.1.127.179            |
|                            |                                                                                                                            | 6           | 6005       | 239.1.1.149              | 239.1.127.149            | 51600        | 6905       | 239.1.1.179              | 239.1.127.179            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011       | 239.1.1.133              | 239.1.127.133            | 51102        | 1911       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 2           | 2011       | 239.1.1.133              | 239.1.127.133            | 51202        | 2911       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 3           | 3011       | 239.1.1.133              | 239.1.127.133            | 51302        | 3911       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 4           | 4011       | 239.1.1.133              | 239.1.127.133            | 51402        | 4911       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 5           | 5011       | 239.1.1.133              | 239.1.127.133            | 51502        | 5911       | 239.1.1.159              | 239.1.127.159            |
|                            |                                                                                                                            | 6           | 6011       | 239.1.1.133              | 239.1.127.133            | 51602        | 6911       | 239.1.1.159              | 239.1.127.159            |
| Quote Request              | Quote Request (336)                                                                                                        | 1           | 1020       | 239.1.1.133              | 239.1.127.133            | 51104        |            |                          |                          |
|                            |                                                                                                                            | 2           | 2020       | 239.1.1.133              | 239.1.127.133            | 51204        |            |                          |                          |
|                            |                                                                                                                            | 3           | 3020       | 239.1.1.133              | 239.1.127.133            | 51304        |            |                          |                          |
|                            |                                                                                                                            | 4           | 4020       | 239.1.1.133              | 239.1.127.133            | 51404        |            |                          |                          |
|                            |                                                                                                                            | 5           | 5020       | 239.1.1.133              | 239.1.127.133            | 51504        |            |                          |                          |



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| Channel Names and Messages                |                                               |   | Production (D-Lite SOM) |             |               |       |      |             |               |
|-------------------------------------------|-----------------------------------------------|---|-------------------------|-------------|---------------|-------|------|-------------|---------------|
|                                           |                                               | 6 | 6020                    | 239.1.1.133 | 239.1.127.133 | 51604 |      |             |               |
| <b>Level 2 Price and COP (Compressed)</b> | COP (364)<br>Aggregate OrderBook update (353) | 1 | 1033                    | 239.1.1.152 | 239.1.127.152 | 51100 | 1533 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 2 | 2033                    | 239.1.1.152 | 239.1.127.152 | 51200 | 2533 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 3 | 3033                    | 239.1.1.152 | 239.1.127.152 | 51300 | 3533 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 4 | 4033                    | 239.1.1.152 | 239.1.127.152 | 51400 | 4533 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 5 | 5033                    | 239.1.1.152 | 239.1.127.152 | 51500 | 5533 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 6 | 6033                    | 239.1.1.152 | 239.1.127.152 | 51600 | 6533 | 239.1.1.177 | 239.1.127.177 |
| <b>Statistic</b>                          | Trade Statistic (360)                         | 1 | 1045                    | 239.1.1.152 | 239.1.127.152 | 51101 | 1545 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 2 | 2045                    | 239.1.1.152 | 239.1.127.152 | 51201 | 2545 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 3 | 3045                    | 239.1.1.152 | 239.1.127.152 | 51301 | 3545 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 4 | 4045                    | 239.1.1.152 | 239.1.127.152 | 51401 | 4545 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 5 | 5045                    | 239.1.1.152 | 239.1.127.152 | 51501 | 5545 | 239.1.1.177 | 239.1.127.177 |
|                                           |                                               | 6 | 6045                    | 239.1.1.152 | 239.1.127.152 | 51601 | 6545 | 239.1.1.177 | 239.1.127.177 |
| <b>Market Alert</b>                       | Market Alert (323)                            | 1 | 1049                    | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 2 | 2049                    | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 3 | 3049                    | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 4 | 4049                    | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 5 | 5049                    | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 6 | 6049                    | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| <b>DR Signal</b>                          | Disaster Recovery Signal (105)                | - | 1088                    | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |

2.1.3 OMD Derivatives Lite – Order Feed (snapshot)

| Channel Names and Messages |                 |             | Production (Order Feed Non-SOM) |                          |                          |              |            |                          |                          |
|----------------------------|-----------------|-------------|---------------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages  | Partition # | Channel ID                      | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                 |             |                                 | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Order Feed                 | Add Order (330) | 1           |                                 |                          |                          | 51100        | 1949       | 239.1.1.180              | 239.1.127.180            |
|                            |                 | 2           |                                 |                          |                          | 51200        | 2949       | 239.1.1.180              | 239.1.127.180            |
|                            |                 | 3           |                                 |                          |                          | 51300        | 3949       | 239.1.1.180              | 239.1.127.180            |
|                            |                 | 4           |                                 |                          |                          | 51400        | 4949       | 239.1.1.180              | 239.1.127.180            |
|                            |                 | 5           |                                 |                          |                          | 51500        | 5949       | 239.1.1.180              | 239.1.127.180            |
|                            |                 | 6           |                                 |                          |                          | 51600        | 6949       | 239.1.1.180              | 239.1.127.180            |

2.1.4 OMD Derivatives Standard (non-SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             |            | Production (DS Non-SOM)  |                          |              |            |                          |                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                            |             |            | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001       | 239.1.1.128              | 239.1.127.128            | 51101        | 1501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 2           | 2001       | 239.1.1.128              | 239.1.127.128            | 51201        | 2501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 3           | 3001       | 239.1.1.128              | 239.1.127.128            | 51301        | 3501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 4           | 4001       | 239.1.1.128              | 239.1.127.128            | 51401        | 4501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 5           | 5001       | 239.1.1.128              | 239.1.127.128            | 51501        | 5501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 6           | 6001       | 239.1.1.128              | 239.1.127.128            | 51601        | 6501       | 239.1.1.153              | 239.1.127.153            |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004       | 239.1.1.150              | 239.1.127.150            | 51100        | 1504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                            | 2           | 2004       | 239.1.1.150              | 239.1.127.150            | 51200        | 2504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                            | 3           | 3004       | 239.1.1.150              | 239.1.127.150            | 51300        | 3504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                            | 4           | 4004       | 239.1.1.150              | 239.1.127.150            | 51400        | 4504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                            | 5           | 5004       | 239.1.1.150              | 239.1.127.150            | 51500        | 5504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                            | 6           | 6004       | 239.1.1.150              | 239.1.127.150            | 51600        | 6504       | 239.1.1.175              | 239.1.127.175            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010       | 239.1.1.128              | 239.1.127.128            | 51102        | 1510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 2           | 2010       | 239.1.1.128              | 239.1.127.128            | 51202        | 2510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 3           | 3010       | 239.1.1.128              | 239.1.127.128            | 51302        | 3510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 4           | 4010       | 239.1.1.128              | 239.1.127.128            | 51402        | 4510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 5           | 5010       | 239.1.1.128              | 239.1.127.128            | 51502        | 5510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                            | 6           | 6010       | 239.1.1.128              | 239.1.127.128            | 51602        | 6510       | 239.1.1.153              | 239.1.127.153            |
| Quote Request              | Quote Request (336)                                                                                                        | 1           | 1019       | 239.1.1.128              | 239.1.127.128            | 51104        |            |                          |                          |
|                            |                                                                                                                            | 2           | 2019       | 239.1.1.128              | 239.1.127.128            | 51204        |            |                          |                          |
|                            |                                                                                                                            | 3           | 3019       | 239.1.1.128              | 239.1.127.128            | 51304        |            |                          |                          |
|                            |                                                                                                                            | 4           | 4019       | 239.1.1.128              | 239.1.127.128            | 51404        |            |                          |                          |
|                            |                                                                                                                            | 5           | 5019       | 239.1.1.128              | 239.1.127.128            | 51504        |            |                          |                          |

## OMD-D Connectivity Guide

| Channel Names and Messages                |                                               |   | Production (DS Non-SOM) |             |               |       |      |             |               |
|-------------------------------------------|-----------------------------------------------|---|-------------------------|-------------|---------------|-------|------|-------------|---------------|
|                                           |                                               | 6 | 6019                    | 239.1.1.128 | 239.1.127.128 | 51604 |      |             |               |
| <b>Level 2 Price and COP (Compressed)</b> | COP (364)<br>Aggregate OrderBook update (353) | 1 | 1029                    | 239.1.1.132 | 239.1.127.132 | 51100 | 1529 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 2 | 2029                    | 239.1.1.132 | 239.1.127.132 | 51200 | 2529 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 3 | 3029                    | 239.1.1.132 | 239.1.127.132 | 51300 | 3529 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 4 | 4029                    | 239.1.1.132 | 239.1.127.132 | 51400 | 4529 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 5 | 5029                    | 239.1.1.132 | 239.1.127.132 | 51500 | 5529 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 6 | 6029                    | 239.1.1.132 | 239.1.127.132 | 51600 | 6529 | 239.1.1.157 | 239.1.127.157 |
| <b>Statistic</b>                          | Trade Statistic (360)                         | 1 | 1041                    | 239.1.1.132 | 239.1.127.132 | 51101 | 1541 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 2 | 2041                    | 239.1.1.132 | 239.1.127.132 | 51201 | 2541 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 3 | 3041                    | 239.1.1.132 | 239.1.127.132 | 51301 | 3541 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 4 | 4041                    | 239.1.1.132 | 239.1.127.132 | 51401 | 4541 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 5 | 5041                    | 239.1.1.132 | 239.1.127.132 | 51501 | 5541 | 239.1.1.157 | 239.1.127.157 |
|                                           |                                               | 6 | 6041                    | 239.1.1.132 | 239.1.127.132 | 51601 | 6541 | 239.1.1.157 | 239.1.127.157 |
| <b>Market Alert</b>                       | Market Alert (323)                            | 1 | 1049                    | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 2 | 2049                    | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 3 | 3049                    | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 4 | 4049                    | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 5 | 5049                    | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                           |                                               | 6 | 6049                    | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| <b>DR Signal</b>                          | Disaster Recovery Signal (105)                | - | 1088                    | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |

2.1.5 OMD Derivatives Standard (SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             |            | Production (DS SOM)      |                          |              |            |                          |                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                            |             |            | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002       | 239.1.1.133              | 239.1.127.133            | 51101        | 1502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 2           | 2002       | 239.1.1.133              | 239.1.127.133            | 51201        | 2502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 3           | 3002       | 239.1.1.133              | 239.1.127.133            | 51301        | 3502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 4           | 4002       | 239.1.1.133              | 239.1.127.133            | 51401        | 4502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 5           | 5002       | 239.1.1.133              | 239.1.127.133            | 51501        | 5502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 6           | 6002       | 239.1.1.133              | 239.1.127.133            | 51601        | 6502       | 239.1.1.158              | 239.1.127.158            |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005       | 239.1.1.149              | 239.1.127.149            | 51100        | 1505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                            | 2           | 2005       | 239.1.1.149              | 239.1.127.149            | 51200        | 2505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                            | 3           | 3005       | 239.1.1.149              | 239.1.127.149            | 51300        | 3505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                            | 4           | 4005       | 239.1.1.149              | 239.1.127.149            | 51400        | 4505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                            | 5           | 5005       | 239.1.1.149              | 239.1.127.149            | 51500        | 5505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                            | 6           | 6005       | 239.1.1.149              | 239.1.127.149            | 51600        | 6505       | 239.1.1.174              | 239.1.127.174            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011       | 239.1.1.133              | 239.1.127.133            | 51102        | 1511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 2           | 2011       | 239.1.1.133              | 239.1.127.133            | 51202        | 2511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 3           | 3011       | 239.1.1.133              | 239.1.127.133            | 51302        | 3511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 4           | 4011       | 239.1.1.133              | 239.1.127.133            | 51402        | 4511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 5           | 5011       | 239.1.1.133              | 239.1.127.133            | 51502        | 5511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                            | 6           | 6011       | 239.1.1.133              | 239.1.127.133            | 51602        | 6511       | 239.1.1.158              | 239.1.127.158            |
| Quote Request              | Quote Request (336)                                                                                                        | 1           | 1020       | 239.1.1.133              | 239.1.127.133            | 51104        |            |                          |                          |
|                            |                                                                                                                            | 2           | 2020       | 239.1.1.133              | 239.1.127.133            | 51204        |            |                          |                          |
|                            |                                                                                                                            | 3           | 3020       | 239.1.1.133              | 239.1.127.133            | 51304        |            |                          |                          |
|                            |                                                                                                                            | 4           | 4020       | 239.1.1.133              | 239.1.127.133            | 51404        |            |                          |                          |
|                            |                                                                                                                            | 5           | 5020       | 239.1.1.133              | 239.1.127.133            | 51504        |            |                          |                          |

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| Channel Names and Messages         |                                               |   | Production (DS SOM) |             |               |       |      |             |               |
|------------------------------------|-----------------------------------------------|---|---------------------|-------------|---------------|-------|------|-------------|---------------|
|                                    |                                               | 6 | 6020                | 239.1.1.133 | 239.1.127.133 | 51604 |      |             |               |
| Level 2 Price and COP (Compressed) | COP (364)<br>Aggregate OrderBook update (353) | 1 | 1030                | 239.1.1.137 | 239.1.127.137 | 51100 | 1530 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 2 | 2030                | 239.1.1.137 | 239.1.127.137 | 51200 | 2530 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 3 | 3030                | 239.1.1.137 | 239.1.127.137 | 51300 | 3530 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 4 | 4030                | 239.1.1.137 | 239.1.127.137 | 51400 | 4530 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 5 | 5030                | 239.1.1.137 | 239.1.127.137 | 51500 | 5530 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 6 | 6030                | 239.1.1.137 | 239.1.127.137 | 51600 | 6530 | 239.1.1.162 | 239.1.127.162 |
| Statistic                          | Trade Statistic (360)                         | 1 | 1042                | 239.1.1.137 | 239.1.127.137 | 51101 | 1542 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 2 | 2042                | 239.1.1.137 | 239.1.127.137 | 51201 | 2542 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 3 | 3042                | 239.1.1.137 | 239.1.127.137 | 51301 | 3542 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 4 | 4042                | 239.1.1.137 | 239.1.127.137 | 51401 | 4542 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 5 | 5042                | 239.1.1.137 | 239.1.127.137 | 51501 | 5542 | 239.1.1.162 | 239.1.127.162 |
|                                    |                                               | 6 | 6042                | 239.1.1.137 | 239.1.127.137 | 51601 | 6542 | 239.1.1.162 | 239.1.127.162 |
| Market Alert                       | Market Alert (323)                            | 1 | 1049                | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                               | 2 | 2049                | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                               | 3 | 3049                | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                               | 4 | 4049                | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                               | 5 | 5049                | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                               | 6 | 6049                | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| DR Signal                          | Disaster Recovery Signal (105)                | - | 1088                | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |

2.1.6 OMD Derivatives Premium (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                     |             | Production (DP Non-SOM) |                          |                          |              |            |                          |                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|-------------|-------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                      | Partition # | Channel ID              | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                     |             |                         | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305) | 1           | 1001                    | 239.1.1.128              | 239.1.127.128            | 51101        | 1501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 2           | 2001                    | 239.1.1.128              | 239.1.127.128            | 51201        | 2501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 3           | 3001                    | 239.1.1.128              | 239.1.127.128            | 51301        | 3501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 4           | 4001                    | 239.1.1.128              | 239.1.127.128            | 51401        | 4501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 5           | 5001                    | 239.1.1.128              | 239.1.127.128            | 51501        | 5501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 6           | 6001                    | 239.1.1.128              | 239.1.127.128            | 51601        | 6501       | 239.1.1.153              | 239.1.127.153            |
| Open Interest              | Open Interest (366)                                                                                                 | 1           | 1004                    | 239.1.1.150              | 239.1.127.150            | 51100        | 1504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                     | 2           | 2004                    | 239.1.1.150              | 239.1.127.150            | 51200        | 2504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                     | 3           | 3004                    | 239.1.1.150              | 239.1.127.150            | 51300        | 3504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                     | 4           | 4004                    | 239.1.1.150              | 239.1.127.150            | 51400        | 4504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                     | 5           | 5004                    | 239.1.1.150              | 239.1.127.150            | 51500        | 5504       | 239.1.1.175              | 239.1.127.175            |
|                            |                                                                                                                     | 6           | 6004                    | 239.1.1.150              | 239.1.127.150            | 51600        | 6504       | 239.1.1.175              | 239.1.127.175            |
| Implied Volatility         | Implied Volatility (367)                                                                                            | 1           | 1007                    | 239.1.1.141              | 239.1.127.141            | 51100        | 1507       | 239.1.1.166              | 239.1.127.166            |
|                            |                                                                                                                     | 2           | 2007                    | 239.1.1.141              | 239.1.127.141            | 51200        | 2507       | 239.1.1.166              | 239.1.127.166            |
|                            |                                                                                                                     | 3           | 3007                    | 239.1.1.141              | 239.1.127.141            | 51300        | 3507       | 239.1.1.166              | 239.1.127.166            |
|                            |                                                                                                                     | 4           | 4007                    | 239.1.1.141              | 239.1.127.141            | 51400        | 4507       | 239.1.1.166              | 239.1.127.166            |
|                            |                                                                                                                     | 5           | 5007                    | 239.1.1.141              | 239.1.127.141            | 51500        | 5507       | 239.1.1.166              | 239.1.127.166            |
|                            |                                                                                                                     | 6           | 6007                    | 239.1.1.141              | 239.1.127.141            | 51600        | 6507       | 239.1.1.166              | 239.1.127.166            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)                                                                      | 1           | 1010                    | 239.1.1.128              | 239.1.127.128            | 51102        | 1510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 2           | 2010                    | 239.1.1.128              | 239.1.127.128            | 51202        | 2510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                     | 3           | 3010                    | 239.1.1.128              | 239.1.127.128            | 51302        | 3510       | 239.1.1.153              | 239.1.127.153            |



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| Channel Names and Messages   |                                                              |   | Production (DP Non-SOM) |             |               |       |      |             |               |
|------------------------------|--------------------------------------------------------------|---|-------------------------|-------------|---------------|-------|------|-------------|---------------|
|                              | Commodity & Class Status (322)                               | 4 | 4010                    | 239.1.1.128 | 239.1.127.128 | 51402 | 4510 | 239.1.1.153 | 239.1.127.153 |
|                              | VCM Trigger (324)                                            | 5 | 5010                    | 239.1.1.128 | 239.1.127.128 | 51502 | 5510 | 239.1.1.153 | 239.1.127.153 |
|                              | THM Trigger (325)                                            | 6 | 6010                    | 239.1.1.128 | 239.1.127.128 | 51602 | 6510 | 239.1.1.153 | 239.1.127.153 |
|                              |                                                              |   |                         |             |               |       |      |             |               |
| Quote Request                | Quote Request (336)                                          | 1 | 1019                    | 239.1.1.128 | 239.1.127.128 | 51104 |      |             |               |
|                              |                                                              | 2 | 2019                    | 239.1.1.128 | 239.1.127.128 | 51204 |      |             |               |
|                              |                                                              | 3 | 3019                    | 239.1.1.128 | 239.1.127.128 | 51304 |      |             |               |
|                              |                                                              | 4 | 4019                    | 239.1.1.128 | 239.1.127.128 | 51404 |      |             |               |
|                              |                                                              | 5 | 5019                    | 239.1.1.128 | 239.1.127.128 | 51504 |      |             |               |
|                              |                                                              | 6 | 6019                    | 239.1.1.128 | 239.1.127.128 | 51604 |      |             |               |
| Level 2 Price, COP and Trade | Aggregate OrderBook update (353)<br>COP (364)<br>Trade (350) | 1 | 1026                    | 239.1.1.131 | 239.1.127.131 | 51100 | 1526 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 2 | 2026                    | 239.1.1.131 | 239.1.127.131 | 51200 | 2526 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 3 | 3026                    | 239.1.1.131 | 239.1.127.131 | 51300 | 3526 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 4 | 4026                    | 239.1.1.131 | 239.1.127.131 | 51400 | 4526 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 5 | 5026                    | 239.1.1.131 | 239.1.127.131 | 51500 | 5526 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 6 | 6026                    | 239.1.1.131 | 239.1.127.131 | 51600 | 6526 | 239.1.1.156 | 239.1.127.156 |
| Statistic                    | Trade Statistic (360)                                        | 1 | 1038                    | 239.1.1.131 | 239.1.127.131 | 51101 | 1538 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 2 | 2038                    | 239.1.1.131 | 239.1.127.131 | 51201 | 2538 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 3 | 3038                    | 239.1.1.131 | 239.1.127.131 | 51301 | 3538 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 4 | 4038                    | 239.1.1.131 | 239.1.127.131 | 51401 | 4538 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 5 | 5038                    | 239.1.1.131 | 239.1.127.131 | 51501 | 5538 | 239.1.1.156 | 239.1.127.156 |
|                              |                                                              | 6 | 6038                    | 239.1.1.131 | 239.1.127.131 | 51601 | 6538 | 239.1.1.156 | 239.1.127.156 |
| Market Alert                 | Market Alert (323)                                           | 1 | 1049                    | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 2 | 2049                    | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 3 | 3049                    | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 4 | 4049                    | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 5 | 5049                    | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 6 | 6049                    | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
|                              | Trade (350)                                                  | 1 | 1051                    | 239.1.1.139 | 239.1.127.139 | 51100 |      |             |               |



**OMD-D Connectivity Guide**

| Channel Names and Messages  |                                |   | Production (DP Non-SOM) |             |               |       |  |  |  |
|-----------------------------|--------------------------------|---|-------------------------|-------------|---------------|-------|--|--|--|
| Trade Amend and Block Trade | Trade Amendment (356)          | 2 | 2051                    | 239.1.1.139 | 239.1.127.139 | 51200 |  |  |  |
|                             |                                | 3 | 3051                    | 239.1.1.139 | 239.1.127.139 | 51300 |  |  |  |
|                             |                                | 4 | 4051                    | 239.1.1.139 | 239.1.127.139 | 51400 |  |  |  |
|                             |                                | 5 | 5051                    | 239.1.1.139 | 239.1.127.139 | 51500 |  |  |  |
|                             |                                | 6 | 6051                    | 239.1.1.139 | 239.1.127.139 | 51600 |  |  |  |
| DR Signal                   | Disaster Recovery Signal (105) | - | 1088                    | 239.1.1.144 | 239.1.127.144 | 51000 |  |  |  |

2.1.7 OMD Derivatives Premium (SOM) (streaming)

| Channel Names and Messages |                                                                                                                     |             | Production (DP SOM) |                          |                          |              |            |                          |                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|-------------|---------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                      | Partition # | Channel ID          | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                     |             |                     | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305) | 1           | 1002                | 239.1.1.133              | 239.1.127.133            | 51101        | 1502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 2           | 2002                | 239.1.1.133              | 239.1.127.133            | 51201        | 2502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 3           | 3002                | 239.1.1.133              | 239.1.127.133            | 51301        | 3502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 4           | 4002                | 239.1.1.133              | 239.1.127.133            | 51401        | 4502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 5           | 5002                | 239.1.1.133              | 239.1.127.133            | 51501        | 5502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 6           | 6002                | 239.1.1.133              | 239.1.127.133            | 51601        | 6502       | 239.1.1.158              | 239.1.127.158            |
| Open Interest              | Open Interest (366)                                                                                                 | 1           | 1005                | 239.1.1.149              | 239.1.127.149            | 51100        | 1505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                     | 2           | 2005                | 239.1.1.149              | 239.1.127.149            | 51200        | 2505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                     | 3           | 3005                | 239.1.1.149              | 239.1.127.149            | 51300        | 3505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                     | 4           | 4005                | 239.1.1.149              | 239.1.127.149            | 51400        | 4505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                     | 5           | 5005                | 239.1.1.149              | 239.1.127.149            | 51500        | 5505       | 239.1.1.174              | 239.1.127.174            |
|                            |                                                                                                                     | 6           | 6005                | 239.1.1.149              | 239.1.127.149            | 51600        | 6505       | 239.1.1.174              | 239.1.127.174            |
| Implied Volatility         | Implied Volatility (367)                                                                                            | 1           | 1008                | 239.1.1.142              | 239.1.127.142            | 51100        | 1508       | 239.1.1.167              | 239.1.127.167            |
|                            |                                                                                                                     | 2           | 2008                | 239.1.1.142              | 239.1.127.142            | 51200        | 2508       | 239.1.1.167              | 239.1.127.167            |
|                            |                                                                                                                     | 3           | 3008                | 239.1.1.142              | 239.1.127.142            | 51300        | 3508       | 239.1.1.167              | 239.1.127.167            |
|                            |                                                                                                                     | 4           | 4008                | 239.1.1.142              | 239.1.127.142            | 51400        | 4508       | 239.1.1.167              | 239.1.127.167            |
|                            |                                                                                                                     | 5           | 5008                | 239.1.1.142              | 239.1.127.142            | 51500        | 5508       | 239.1.1.167              | 239.1.127.167            |
|                            |                                                                                                                     | 6           | 6008                | 239.1.1.142              | 239.1.127.142            | 51600        | 6508       | 239.1.1.167              | 239.1.127.167            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)                                    | 1           | 1011                | 239.1.1.133              | 239.1.127.133            | 51102        | 1511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 2           | 2011                | 239.1.1.133              | 239.1.127.133            | 51202        | 2511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 3           | 3011                | 239.1.1.133              | 239.1.127.133            | 51302        | 3511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                     | 4           | 4011                | 239.1.1.133              | 239.1.127.133            | 51402        | 4511       | 239.1.1.158              | 239.1.127.158            |

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| Channel Names and Messages   |                                                              |   | Production (DP SOM) |             |               |       |      |             |               |
|------------------------------|--------------------------------------------------------------|---|---------------------|-------------|---------------|-------|------|-------------|---------------|
|                              | VCM Trigger (324)                                            | 5 | 5011                | 239.1.1.133 | 239.1.127.133 | 51502 | 5511 | 239.1.1.158 | 239.1.127.158 |
|                              | THM Trigger (325)                                            | 6 | 6011                | 239.1.1.133 | 239.1.127.133 | 51602 | 6511 | 239.1.1.158 | 239.1.127.158 |
| Quote Request                | Quote Request (336)                                          | 1 | 1020                | 239.1.1.133 | 239.1.127.133 | 51104 |      |             |               |
|                              |                                                              | 2 | 2020                | 239.1.1.133 | 239.1.127.133 | 51204 |      |             |               |
|                              |                                                              | 3 | 3020                | 239.1.1.133 | 239.1.127.133 | 51304 |      |             |               |
|                              |                                                              | 4 | 4020                | 239.1.1.133 | 239.1.127.133 | 51404 |      |             |               |
|                              |                                                              | 5 | 5020                | 239.1.1.133 | 239.1.127.133 | 51504 |      |             |               |
|                              |                                                              | 6 | 6020                | 239.1.1.133 | 239.1.127.133 | 51604 |      |             |               |
| Level 2 Price, COP and Trade | Aggregate OrderBook update (353)<br>COP (364)<br>Trade (350) | 1 | 1027                | 239.1.1.136 | 239.1.127.136 | 51100 | 1527 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 2 | 2027                | 239.1.1.136 | 239.1.127.136 | 51200 | 2527 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 3 | 3027                | 239.1.1.136 | 239.1.127.136 | 51300 | 3527 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 4 | 4027                | 239.1.1.136 | 239.1.127.136 | 51400 | 4527 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 5 | 5027                | 239.1.1.136 | 239.1.127.136 | 51500 | 5527 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 6 | 6027                | 239.1.1.136 | 239.1.127.136 | 51600 | 6527 | 239.1.1.161 | 239.1.127.161 |
| Statistic                    | Trade Statistic (360)                                        | 1 | 1039                | 239.1.1.136 | 239.1.127.136 | 51101 | 1539 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 2 | 2039                | 239.1.1.136 | 239.1.127.136 | 51201 | 2539 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 3 | 3039                | 239.1.1.136 | 239.1.127.136 | 51301 | 3539 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 4 | 4039                | 239.1.1.136 | 239.1.127.136 | 51401 | 4539 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 5 | 5039                | 239.1.1.136 | 239.1.127.136 | 51501 | 5539 | 239.1.1.161 | 239.1.127.161 |
|                              |                                                              | 6 | 6039                | 239.1.1.136 | 239.1.127.136 | 51601 | 6539 | 239.1.1.161 | 239.1.127.161 |
| Market Alert                 | Market Alert (323)                                           | 1 | 1049                | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 2 | 2049                | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 3 | 3049                | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 4 | 4049                | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 5 | 5049                | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                              |                                                              | 6 | 6049                | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| Trade Amend and              | Trade (350)                                                  | 1 | 1052                | 239.1.1.140 | 239.1.127.140 | 51100 |      |             |               |
|                              | Trade Amendment (356)                                        | 2 | 2052                | 239.1.1.140 | 239.1.127.140 | 51200 |      |             |               |

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| Channel Names and Messages |                                |   | Production (DP SOM) |             |               |       |  |  |  |
|----------------------------|--------------------------------|---|---------------------|-------------|---------------|-------|--|--|--|
| <b>Block Trade</b>         |                                | 3 | 3052                | 239.1.1.140 | 239.1.127.140 | 51300 |  |  |  |
|                            |                                | 4 | 4052                | 239.1.1.140 | 239.1.127.140 | 51400 |  |  |  |
|                            |                                | 5 | 5052                | 239.1.1.140 | 239.1.127.140 | 51500 |  |  |  |
|                            |                                | 6 | 6052                | 239.1.1.140 | 239.1.127.140 | 51600 |  |  |  |
| <b>DR Signal</b>           | Disaster Recovery Signal (105) | - | 1088                | 239.1.1.144 | 239.1.127.144 | 51000 |  |  |  |

2.1.8 OMD Derivatives Full Tick (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                      |             | Production (DF Non-SOM) |                          |                          |              |            |                          |                          |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                       | Partition # | Channel ID              | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                                                      |             |                         | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                  | 1           | 1001                    | 239.1.1.128              | 239.1.127.128            | 51101        | 1501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 2           | 2001                    | 239.1.1.128              | 239.1.127.128            | 51201        | 2501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 3           | 3001                    | 239.1.1.128              | 239.1.127.128            | 51301        | 3501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 4           | 4001                    | 239.1.1.128              | 239.1.127.128            | 51401        | 4501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 5           | 5001                    | 239.1.1.128              | 239.1.127.128            | 51501        | 5501       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 6           | 6001                    | 239.1.1.128              | 239.1.127.128            | 51601        | 6501       | 239.1.1.153              | 239.1.127.153            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                           | 1           | 1010                    | 239.1.1.128              | 239.1.127.128            | 51102        | 1510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 2           | 2010                    | 239.1.1.128              | 239.1.127.128            | 51202        | 2510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 3           | 3010                    | 239.1.1.128              | 239.1.127.128            | 51302        | 3510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 4           | 4010                    | 239.1.1.128              | 239.1.127.128            | 51402        | 4510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 5           | 5010                    | 239.1.1.128              | 239.1.127.128            | 51502        | 5510       | 239.1.1.153              | 239.1.127.153            |
|                            |                                                                                                                                                      | 6           | 6010                    | 239.1.1.128              | 239.1.127.128            | 51602        | 6510       | 239.1.1.153              | 239.1.127.153            |
| Order, COP and Trade       | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>COP (364)<br>Trade (350) | 1           | 1013                    | 239.1.1.130              | 239.1.127.130            | 51100        | 1513       | 239.1.1.155              | 239.1.127.155            |
|                            |                                                                                                                                                      | 2           | 2013                    | 239.1.1.130              | 239.1.127.130            | 51200        | 2513       | 239.1.1.155              | 239.1.127.155            |
|                            |                                                                                                                                                      | 3           | 3013                    | 239.1.1.130              | 239.1.127.130            | 51300        | 3513       | 239.1.1.155              | 239.1.127.155            |
|                            |                                                                                                                                                      | 4           | 4013                    | 239.1.1.130              | 239.1.127.130            | 51400        | 4513       | 239.1.1.155              | 239.1.127.155            |
|                            |                                                                                                                                                      | 5           | 5013                    | 239.1.1.130              | 239.1.127.130            | 51500        | 5513       | 239.1.1.155              | 239.1.127.155            |
|                            |                                                                                                                                                      | 6           | 6013                    | 239.1.1.130              | 239.1.127.130            | 51600        | 6513       | 239.1.1.155              | 239.1.127.155            |
| Quote Request              | Quote Request (336)                                                                                                                                  | 1           | 1019                    | 239.1.1.128              | 239.1.127.128            | 51104        |            |                          |                          |
|                            |                                                                                                                                                      | 2           | 2019                    | 239.1.1.128              | 239.1.127.128            | 51204        |            |                          |                          |
|                            |                                                                                                                                                      | 3           | 3019                    | 239.1.1.128              | 239.1.127.128            | 51304        |            |                          |                          |
|                            |                                                                                                                                                      | 4           | 4019                    | 239.1.1.128              | 239.1.127.128            | 51404        |            |                          |                          |

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| Channel Names and Messages         |                                      |   | Production (DF Non-SOM) |             |               |       |      |             |               |
|------------------------------------|--------------------------------------|---|-------------------------|-------------|---------------|-------|------|-------------|---------------|
|                                    |                                      | 5 | 5019                    | 239.1.1.128 | 239.1.127.128 | 51504 |      |             |               |
|                                    |                                      | 6 | 6019                    | 239.1.1.128 | 239.1.127.128 | 51604 |      |             |               |
| <b>Market Alert</b>                | Market Alert (323)                   | 1 | 1049                    | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 2 | 2049                    | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 3 | 3049                    | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 4 | 4049                    | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 5 | 5049                    | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 6 | 6049                    | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| <b>Trade Amend and Block Trade</b> | Trade (350)<br>Trade Amendment (356) | 1 | 1051                    | 239.1.1.139 | 239.1.127.139 | 51100 |      |             |               |
|                                    |                                      | 2 | 2051                    | 239.1.1.139 | 239.1.127.139 | 51200 |      |             |               |
|                                    |                                      | 3 | 3051                    | 239.1.1.139 | 239.1.127.139 | 51300 |      |             |               |
|                                    |                                      | 4 | 4051                    | 239.1.1.139 | 239.1.127.139 | 51400 |      |             |               |
|                                    |                                      | 5 | 5051                    | 239.1.1.139 | 239.1.127.139 | 51500 |      |             |               |
|                                    |                                      | 6 | 6051                    | 239.1.1.139 | 239.1.127.139 | 51600 |      |             |               |
| <b>DR Signal</b>                   | Disaster Recovery Signal (105)       | - | 1088                    | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |

2.1.9 OMD Derivatives Full Tick (SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                      |             |            | Production (DF SOM)      |                          |              |            |                          |                          |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                       | Partition # | Channel ID | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                                                                                                                                      |             |            | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                  | 1           | 1002       | 239.1.1.133              | 239.1.127.133            | 51101        | 1502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 2           | 2002       | 239.1.1.133              | 239.1.127.133            | 51201        | 2502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 3           | 3002       | 239.1.1.133              | 239.1.127.133            | 51301        | 3502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 4           | 4002       | 239.1.1.133              | 239.1.127.133            | 51401        | 4502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 5           | 5002       | 239.1.1.133              | 239.1.127.133            | 51501        | 5502       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 6           | 6002       | 239.1.1.133              | 239.1.127.133            | 51601        | 6502       | 239.1.1.158              | 239.1.127.158            |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                           | 1           | 1011       | 239.1.1.133              | 239.1.127.133            | 51102        | 1511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 2           | 2011       | 239.1.1.133              | 239.1.127.133            | 51202        | 2511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 3           | 3011       | 239.1.1.133              | 239.1.127.133            | 51302        | 3511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 4           | 4011       | 239.1.1.133              | 239.1.127.133            | 51402        | 4511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 5           | 5011       | 239.1.1.133              | 239.1.127.133            | 51502        | 5511       | 239.1.1.158              | 239.1.127.158            |
|                            |                                                                                                                                                      | 6           | 6011       | 239.1.1.133              | 239.1.127.133            | 51602        | 6511       | 239.1.1.158              | 239.1.127.158            |
| Order, COP and Trade       | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>COP (364)<br>Trade (350) | 1           | 1014       | 239.1.1.135              | 239.1.127.135            | 51100        | 1514       | 239.1.1.160              | 239.1.127.160            |
|                            |                                                                                                                                                      | 2           | 2014       | 239.1.1.135              | 239.1.127.135            | 51200        | 2514       | 239.1.1.160              | 239.1.127.160            |
|                            |                                                                                                                                                      | 3           | 3014       | 239.1.1.135              | 239.1.127.135            | 51300        | 3514       | 239.1.1.160              | 239.1.127.160            |
|                            |                                                                                                                                                      | 4           | 4014       | 239.1.1.135              | 239.1.127.135            | 51400        | 4514       | 239.1.1.160              | 239.1.127.160            |
|                            |                                                                                                                                                      | 5           | 5014       | 239.1.1.135              | 239.1.127.135            | 51500        | 5514       | 239.1.1.160              | 239.1.127.160            |
|                            |                                                                                                                                                      | 6           | 6014       | 239.1.1.135              | 239.1.127.135            | 51600        | 6514       | 239.1.1.160              | 239.1.127.160            |
| Quote Request              | Quote Request (336)                                                                                                                                  | 1           | 1020       | 239.1.1.133              | 239.1.127.133            | 51104        |            |                          |                          |
|                            |                                                                                                                                                      | 2           | 2020       | 239.1.1.133              | 239.1.127.133            | 51204        |            |                          |                          |
|                            |                                                                                                                                                      | 3           | 3020       | 239.1.1.133              | 239.1.127.133            | 51304        |            |                          |                          |
|                            |                                                                                                                                                      | 4           | 4020       | 239.1.1.133              | 239.1.127.133            | 51404        |            |                          |                          |

## OMD-D Connectivity Guide

| Channel Names and Messages         |                                      |   | Production (DF SOM) |             |               |       |      |             |               |
|------------------------------------|--------------------------------------|---|---------------------|-------------|---------------|-------|------|-------------|---------------|
|                                    |                                      | 5 | 5020                | 239.1.1.133 | 239.1.127.133 | 51504 |      |             |               |
|                                    |                                      | 6 | 6020                | 239.1.1.133 | 239.1.127.133 | 51604 |      |             |               |
| <b>Market Alert</b>                | Market Alert (323)                   | 1 | 1049                | 239.1.1.144 | 239.1.127.144 | 51100 | 1549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 2 | 2049                | 239.1.1.144 | 239.1.127.144 | 51200 | 2549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 3 | 3049                | 239.1.1.144 | 239.1.127.144 | 51300 | 3549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 4 | 4049                | 239.1.1.144 | 239.1.127.144 | 51400 | 4549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 5 | 5049                | 239.1.1.144 | 239.1.127.144 | 51500 | 5549 | 239.1.1.169 | 239.1.127.169 |
|                                    |                                      | 6 | 6049                | 239.1.1.144 | 239.1.127.144 | 51600 | 6549 | 239.1.1.169 | 239.1.127.169 |
| <b>Trade Amend and Block Trade</b> | Trade (350)<br>Trade Amendment (356) | 1 | 1052                | 239.1.1.140 | 239.1.127.140 | 51100 |      |             |               |
|                                    |                                      | 2 | 2052                | 239.1.1.140 | 239.1.127.140 | 51200 |      |             |               |
|                                    |                                      | 3 | 3052                | 239.1.1.140 | 239.1.127.140 | 51300 |      |             |               |
|                                    |                                      | 4 | 4052                | 239.1.1.140 | 239.1.127.140 | 51400 |      |             |               |
|                                    |                                      | 5 | 5052                | 239.1.1.140 | 239.1.127.140 | 51500 |      |             |               |
|                                    |                                      | 6 | 6052                | 239.1.1.140 | 239.1.127.140 | 51600 |      |             |               |
| <b>DR Signal</b>                   | Disaster Recovery Signal (105)       | - | 1088                | 239.1.1.144 | 239.1.127.144 | 51000 |      |             |               |



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

| Channel Names and Messages  |                                      |             | Production (DT Non-SOM) |                          |                          |              |            |                          |                          |
|-----------------------------|--------------------------------------|-------------|-------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category  | OMD-D Messages                       | Partition # | Channel ID              | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                             |                                      |             |                         | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade                       | Trade (350)                          | 1           | 1016                    | 239.1.1.129              | 239.1.127.129            | 51100        |            |                          |                          |
|                             |                                      | 2           | 2016                    | 239.1.1.129              | 239.1.127.129            | 51200        |            |                          |                          |
|                             |                                      | 3           | 3016                    | 239.1.1.129              | 239.1.127.129            | 51300        |            |                          |                          |
|                             |                                      | 4           | 4016                    | 239.1.1.129              | 239.1.127.129            | 51400        |            |                          |                          |
|                             |                                      | 5           | 5016                    | 239.1.1.129              | 239.1.127.129            | 51500        |            |                          |                          |
|                             |                                      | 6           | 6016                    | 239.1.1.129              | 239.1.127.129            | 51600        |            |                          |                          |
| Trade Amend and Block Trade | Trade (350)<br>Trade Amendment (356) | 1           | 1051                    | 239.1.1.139              | 239.1.127.139            | 51100        |            |                          |                          |
|                             |                                      | 2           | 2051                    | 239.1.1.139              | 239.1.127.139            | 51200        |            |                          |                          |
|                             |                                      | 3           | 3051                    | 239.1.1.139              | 239.1.127.139            | 51300        |            |                          |                          |
|                             |                                      | 4           | 4051                    | 239.1.1.139              | 239.1.127.139            | 51400        |            |                          |                          |
|                             |                                      | 5           | 5051                    | 239.1.1.139              | 239.1.127.139            | 51500        |            |                          |                          |
|                             |                                      | 6           | 6051                    | 239.1.1.139              | 239.1.127.139            | 51600        |            |                          |                          |

2.1.11 OMD Derivatives Trade (SOM) (streaming)

| Channel Names and Messages  |                                      |             | Production (DT SOM) |                          |                          |              |            |                          |                          |
|-----------------------------|--------------------------------------|-------------|---------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category  | OMD-D Messages                       | Partition # | Channel ID          | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                             |                                      |             |                     | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade                       | Trade (350)                          | 1           | 1017                | 239.1.1.134              | 239.1.127.134            | 51100        |            |                          |                          |
|                             |                                      | 2           | 2017                | 239.1.1.134              | 239.1.127.134            | 51200        |            |                          |                          |
|                             |                                      | 3           | 3017                | 239.1.1.134              | 239.1.127.134            | 51300        |            |                          |                          |
|                             |                                      | 4           | 4017                | 239.1.1.134              | 239.1.127.134            | 51400        |            |                          |                          |
|                             |                                      | 5           | 5017                | 239.1.1.134              | 239.1.127.134            | 51500        |            |                          |                          |
|                             |                                      | 6           | 6017                | 239.1.1.134              | 239.1.127.134            | 51600        |            |                          |                          |
| Trade Amend and Block Trade | Trade (350)<br>Trade Amendment (356) | 1           | 1052                | 239.1.1.140              | 239.1.127.140            | 51100        |            |                          |                          |
|                             |                                      | 2           | 2052                | 239.1.1.140              | 239.1.127.140            | 51200        |            |                          |                          |
|                             |                                      | 3           | 3052                | 239.1.1.140              | 239.1.127.140            | 51300        |            |                          |                          |
|                             |                                      | 4           | 4052                | 239.1.1.140              | 239.1.127.140            | 51400        |            |                          |                          |
|                             |                                      | 5           | 5052                | 239.1.1.140              | 239.1.127.140            | 51500        |            |                          |                          |
|                             |                                      | 6           | 6052                | 239.1.1.140              | 239.1.127.140            | 51600        |            |                          |                          |

2.1.12 OMD Index (Streaming)

| Channel Names and Messages |                                          |             | Production (Index) |                          |                          |              |            |                          |                          |
|----------------------------|------------------------------------------|-------------|--------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages                           | Partition # | Channel ID         | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                                          |             |                    | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Index                      | Index Definition (70)<br>Index Data (71) | HKEX        | 40                 | 239.1.1.7                | 239.1.127.7              | 51001        | 540        | 239.1.1.17               | 239.1.127.17             |
|                            |                                          | HSI         | 41                 | 239.1.1.5                | 239.1.127.5              | 51000        | 541        | 239.1.1.15               | 239.1.127.15             |
|                            |                                          | CSI         | 42                 | 239.1.1.6                | 239.1.127.6              | 51000        | 542        | 239.1.1.16               | 239.1.127.16             |
| Index DR Signal            | Disaster Recovery Signal (105)           | -           | 1088               | 239.1.1.144              | 239.1.127.144            | 51000        |            |                          |                          |

### 2.1.13 HKEX OMD Retransmission Unicast Connectivity (For All Non-Index Channels)

A Retransmission Service is provided to recover multicast packet loss in all Non-Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. 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 |

\* Two servers located in DR site are also active and available for connection. Clients may connect any one of those four retransmission servers, but not concurrently.

### 2.1.14 HKEX OMD Index Retransmission Unicast Connectivity (For All Index Channels)

A Retransmission Service for Index is provided to recover multicast packet loss in all Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **OMD-Index Production Environment**.

| Retransmission Server            | IP Unicast Address |
|----------------------------------|--------------------|
| Primary server in primary site   | 10.170.3.61:55455  |
| Secondary server in primary site | 10.170.3.62:55455  |
| Primary server in DR site*       | 10.170.13.61:55455 |
| Secondary server in DR site*     | 10.170.13.62:55455 |

\* Two servers located in DR site are also active and available for connection. Clients may connect any one of those four retransmission servers, but not concurrently.

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## 2.2 OMD-D Test Environment Connectivity Details

There are two types of 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. **Orion Derivatives Platform Trading (ODP-TR) External Testing Environment (ODP-TR-Env)**
  - OMD-D is available in ODP-TR External Testing Environment 1 (ODP-TR-Env1) and ODP-TR External Testing Environment 2 (ODP-TR-Env2) to enable OMD-D clients, who are also EPs, to perform loop test with the ODP-TR, the HKEX Derivatives Market Trading System.
  - Clients should not connect to both ODP-TR-Env1 and ODP-TR-Env2 concurrently unless the bandwidth of their testing connections are sufficient to support both testing environment

### ***2.2.1 OMD-D Readiness Test Environment***

Details of this section will be provided in a later version in due course.

## 2.2.2 ODP-TR External Testing Environment 1 (ODP-TR-Env1)

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

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (D-Lite Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID                   | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                              | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                         | 239.1.1.218              | 239.1.127.218            | 51101 | 1901       | 239.1.1.249              | 239.1.127.249            | 51151 |
|                            |                                                                                                                            | 2           | 2001                         | 239.1.1.218              | 239.1.127.218            | 51201 | 2901       | 239.1.1.249              | 239.1.127.249            | 51251 |
|                            |                                                                                                                            | 3           | 3001                         | 239.1.1.218              | 239.1.127.218            | 51301 | 3901       | 239.1.1.249              | 239.1.127.249            | 51351 |
|                            |                                                                                                                            | 4           | 4001                         | 239.1.1.218              | 239.1.127.218            | 51401 | 4901       | 239.1.1.249              | 239.1.127.249            | 51451 |
|                            |                                                                                                                            | 5           | 5001                         | 239.1.1.218              | 239.1.127.218            | 51501 | 5901       | 239.1.1.249              | 239.1.127.249            | 51551 |
|                            |                                                                                                                            | 6           | 6001                         | 239.1.1.218              | 239.1.127.218            | 51601 | 6901       | 239.1.1.249              | 239.1.127.249            | 51651 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                         | 239.1.1.227              | 239.1.127.227            | 51100 | 1904       | 239.1.1.249              | 239.1.127.249            | 51150 |
|                            |                                                                                                                            | 2           | 2004                         | 239.1.1.227              | 239.1.127.227            | 51200 | 2904       | 239.1.1.249              | 239.1.127.249            | 51250 |
|                            |                                                                                                                            | 3           | 3004                         | 239.1.1.227              | 239.1.127.227            | 51300 | 3904       | 239.1.1.249              | 239.1.127.249            | 51350 |
|                            |                                                                                                                            | 4           | 4004                         | 239.1.1.227              | 239.1.127.227            | 51400 | 4904       | 239.1.1.249              | 239.1.127.249            | 51450 |
|                            |                                                                                                                            | 5           | 5004                         | 239.1.1.227              | 239.1.127.227            | 51500 | 5904       | 239.1.1.249              | 239.1.127.249            | 51550 |
|                            |                                                                                                                            | 6           | 6004                         | 239.1.1.227              | 239.1.127.227            | 51600 | 6904       | 239.1.1.249              | 239.1.127.249            | 51650 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                         | 239.1.1.218              | 239.1.127.218            | 51102 | 1910       | 239.1.1.249              | 239.1.127.249            | 51152 |
|                            |                                                                                                                            | 2           | 2010                         | 239.1.1.218              | 239.1.127.218            | 51202 | 2910       | 239.1.1.249              | 239.1.127.249            | 51252 |
|                            |                                                                                                                            | 3           | 3010                         | 239.1.1.218              | 239.1.127.218            | 51302 | 3910       | 239.1.1.249              | 239.1.127.249            | 51352 |
|                            |                                                                                                                            | 4           | 4010                         | 239.1.1.218              | 239.1.127.218            | 51402 | 4910       | 239.1.1.249              | 239.1.127.249            | 51452 |
|                            |                                                                                                                            | 5           | 5010                         | 239.1.1.218              | 239.1.127.218            | 51502 | 5910       | 239.1.1.249              | 239.1.127.249            | 51552 |
|                            |                                                                                                                            | 6           | 6010                         | 239.1.1.218              | 239.1.127.218            | 51602 | 6910       | 239.1.1.249              | 239.1.127.249            | 51652 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1019                         | 239.1.1.218              | 239.1.127.218            | 51104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2019                         | 239.1.1.218              | 239.1.127.218            | 51204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3019                         | 239.1.1.218              | 239.1.127.218            | 51304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4019                         | 239.1.1.218              | 239.1.127.218            | 51404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5019                         | 239.1.1.218              | 239.1.127.218            | 51504 |            |                          |                          |       |

## OMD-D Connectivity Guide

|                                                                  |                                                                   |   |      |             |               |       |      |             |               |       |
|------------------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                                  |                                                                   | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 51604 |      |             |               |       |
| <b>Level 2 Price and COP Channels</b><br><br><b>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1032 | 239.1.1.228 | 239.1.127.228 | 51100 | 1532 | 239.1.1.249 | 239.1.127.249 | 51100 |
|                                                                  |                                                                   | 2 | 2032 | 239.1.1.228 | 239.1.127.228 | 51200 | 2532 | 239.1.1.249 | 239.1.127.249 | 51200 |
|                                                                  |                                                                   | 3 | 3032 | 239.1.1.228 | 239.1.127.228 | 51300 | 3532 | 239.1.1.249 | 239.1.127.249 | 51300 |
|                                                                  |                                                                   | 4 | 4032 | 239.1.1.228 | 239.1.127.228 | 51400 | 3532 | 239.1.1.249 | 239.1.127.249 | 51400 |
|                                                                  |                                                                   | 5 | 5032 | 239.1.1.228 | 239.1.127.228 | 51500 | 3532 | 239.1.1.249 | 239.1.127.249 | 51500 |
|                                                                  |                                                                   | 6 | 6032 | 239.1.1.228 | 239.1.127.228 | 51600 | 3532 | 239.1.1.249 | 239.1.127.249 | 51600 |
| <b>Trade Statistic Channels</b>                                  | Trade Statistic (360)                                             | 1 | 1044 | 239.1.1.228 | 239.1.127.228 | 51101 | 1544 | 239.1.1.249 | 239.1.127.249 | 51101 |
|                                                                  |                                                                   | 2 | 2044 | 239.1.1.228 | 239.1.127.228 | 51201 | 2544 | 239.1.1.249 | 239.1.127.249 | 51201 |
|                                                                  |                                                                   | 3 | 3044 | 239.1.1.228 | 239.1.127.228 | 51301 | 3544 | 239.1.1.249 | 239.1.127.249 | 51301 |
|                                                                  |                                                                   | 4 | 4044 | 239.1.1.228 | 239.1.127.228 | 51401 | 4544 | 239.1.1.249 | 239.1.127.249 | 51401 |
|                                                                  |                                                                   | 5 | 5044 | 239.1.1.228 | 239.1.127.228 | 51501 | 5544 | 239.1.1.249 | 239.1.127.249 | 51501 |
|                                                                  |                                                                   | 6 | 6044 | 239.1.1.228 | 239.1.127.228 | 51601 | 6544 | 239.1.1.249 | 239.1.127.249 | 51601 |
| <b>Market Alert Channels</b>                                     | Market Alert (323)                                                | 1 | 1049 | 239.1.1.132 | 239.1.127.132 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                                  |                                                                   | 2 | 2049 | 239.1.1.132 | 239.1.127.132 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                                  |                                                                   | 3 | 3049 | 239.1.1.132 | 239.1.127.132 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                                  |                                                                   | 4 | 4049 | 239.1.1.132 | 239.1.127.132 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                                  |                                                                   | 5 | 5049 | 239.1.1.132 | 239.1.127.132 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                                  |                                                                   | 6 | 6049 | 239.1.1.132 | 239.1.127.132 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Derivatives DR Signal Channel</b>                             | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.132 | 239.1.127.132 | 51000 |      |             |               |       |



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

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (D-Lite SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002                     | 239.1.1.217              | 239.1.127.217            | 51101 | 1902       | 239.1.1.247              | 239.1.127.247            | 51151 |
|                            |                                                                                                                            | 2           | 2002                     | 239.1.1.217              | 239.1.127.217            | 51201 | 2902       | 239.1.1.247              | 239.1.127.247            | 51251 |
|                            |                                                                                                                            | 3           | 3002                     | 239.1.1.217              | 239.1.127.217            | 51301 | 3902       | 239.1.1.247              | 239.1.127.247            | 51351 |
|                            |                                                                                                                            | 4           | 4002                     | 239.1.1.217              | 239.1.127.217            | 51401 | 4902       | 239.1.1.247              | 239.1.127.247            | 51451 |
|                            |                                                                                                                            | 5           | 5002                     | 239.1.1.217              | 239.1.127.217            | 51501 | 5902       | 239.1.1.247              | 239.1.127.247            | 51551 |
|                            |                                                                                                                            | 6           | 6002                     | 239.1.1.217              | 239.1.127.217            | 51601 | 6902       | 239.1.1.247              | 239.1.127.247            | 51651 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005                     | 239.1.1.225              | 239.1.127.225            | 51100 | 1905       | 239.1.1.247              | 239.1.127.247            | 51150 |
|                            |                                                                                                                            | 2           | 2005                     | 239.1.1.225              | 239.1.127.225            | 51200 | 2905       | 239.1.1.247              | 239.1.127.247            | 51250 |
|                            |                                                                                                                            | 3           | 3005                     | 239.1.1.225              | 239.1.127.225            | 51300 | 3905       | 239.1.1.247              | 239.1.127.247            | 51350 |
|                            |                                                                                                                            | 4           | 4005                     | 239.1.1.225              | 239.1.127.225            | 51400 | 4905       | 239.1.1.247              | 239.1.127.247            | 51450 |
|                            |                                                                                                                            | 5           | 5005                     | 239.1.1.225              | 239.1.127.225            | 51500 | 5905       | 239.1.1.247              | 239.1.127.247            | 51550 |
|                            |                                                                                                                            | 6           | 6005                     | 239.1.1.225              | 239.1.127.225            | 51600 | 6905       | 239.1.1.247              | 239.1.127.247            | 51650 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011                     | 239.1.1.217              | 239.1.127.217            | 51102 | 1911       | 239.1.1.247              | 239.1.127.247            | 51152 |
|                            |                                                                                                                            | 2           | 2011                     | 239.1.1.217              | 239.1.127.217            | 51202 | 2911       | 239.1.1.247              | 239.1.127.247            | 51252 |
|                            |                                                                                                                            | 3           | 3011                     | 239.1.1.217              | 239.1.127.217            | 51302 | 3911       | 239.1.1.247              | 239.1.127.247            | 51352 |
|                            |                                                                                                                            | 4           | 4011                     | 239.1.1.217              | 239.1.127.217            | 51402 | 4911       | 239.1.1.247              | 239.1.127.247            | 51452 |
|                            |                                                                                                                            | 5           | 5011                     | 239.1.1.217              | 239.1.127.217            | 51502 | 5911       | 239.1.1.247              | 239.1.127.247            | 51552 |
|                            |                                                                                                                            | 6           | 6011                     | 239.1.1.217              | 239.1.127.217            | 51602 | 6911       | 239.1.1.247              | 239.1.127.247            | 51652 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1020                     | 239.1.1.217              | 239.1.127.217            | 51104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2020                     | 239.1.1.217              | 239.1.127.217            | 51204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3020                     | 239.1.1.217              | 239.1.127.217            | 51304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4020                     | 239.1.1.217              | 239.1.127.217            | 51404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5020                     | 239.1.1.217              | 239.1.127.217            | 51504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6020                     | 239.1.1.217              | 239.1.127.217            | 51604 |            |                          |                          |       |

## OMD-D Connectivity Guide

|                                                           |                                                                   |   |      |             |               |       |      |             |               |       |
|-----------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br>(Compressed) | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1033 | 239.1.1.226 | 239.1.127.226 | 51100 | 1533 | 239.1.1.247 | 239.1.127.247 | 51100 |
|                                                           |                                                                   | 2 | 2033 | 239.1.1.226 | 239.1.127.226 | 51200 | 2533 | 239.1.1.247 | 239.1.127.247 | 51200 |
|                                                           |                                                                   | 3 | 3033 | 239.1.1.226 | 239.1.127.226 | 51300 | 3533 | 239.1.1.247 | 239.1.127.247 | 51300 |
|                                                           |                                                                   | 4 | 4033 | 239.1.1.226 | 239.1.127.226 | 51400 | 4533 | 239.1.1.247 | 239.1.127.247 | 51400 |
|                                                           |                                                                   | 5 | 5033 | 239.1.1.226 | 239.1.127.226 | 51500 | 5533 | 239.1.1.247 | 239.1.127.247 | 51500 |
|                                                           |                                                                   | 6 | 6033 | 239.1.1.226 | 239.1.127.226 | 51600 | 6533 | 239.1.1.247 | 239.1.127.247 | 51600 |
| <b>Trade Statistic Channels</b>                           | Trade Statistic (360)                                             | 1 | 1045 | 239.1.1.226 | 239.1.127.226 | 51101 | 1545 | 239.1.1.247 | 239.1.127.247 | 51101 |
|                                                           |                                                                   | 2 | 2045 | 239.1.1.226 | 239.1.127.226 | 51201 | 2545 | 239.1.1.247 | 239.1.127.247 | 51201 |
|                                                           |                                                                   | 3 | 3045 | 239.1.1.226 | 239.1.127.226 | 51301 | 3545 | 239.1.1.247 | 239.1.127.247 | 51301 |
|                                                           |                                                                   | 4 | 4045 | 239.1.1.226 | 239.1.127.226 | 51401 | 4545 | 239.1.1.247 | 239.1.127.247 | 51401 |
|                                                           |                                                                   | 5 | 5045 | 239.1.1.226 | 239.1.127.226 | 51501 | 5545 | 239.1.1.247 | 239.1.127.247 | 51501 |
|                                                           |                                                                   | 6 | 6045 | 239.1.1.226 | 239.1.127.226 | 51601 | 6545 | 239.1.1.247 | 239.1.127.247 | 51601 |
| <b>Market Alert Channels</b>                              | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                           |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                           |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                           |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                           |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                           |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Derivatives DR Signal Channel</b>                      | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.232 | 239.1.127.232 | 51000 |      |             |               |       |

2.2.2.3 OMD Derivatives Lite – Order Feed (snapshot)

| Channel Names and Messages |                 |             | ODP-TR-Env1 (OrderFeed Non SOM) |                          |                          |              |            |                          |                          |
|----------------------------|-----------------|-------------|---------------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages  | Partition # | Channel ID                      | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                 |             |                                 | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Order Feed Channel         | Add Order (330) | 1           |                                 |                          |                          | 51130        | 1949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 2           |                                 |                          |                          | 51230        | 2949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 3           |                                 |                          |                          | 51330        | 3949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 4           |                                 |                          |                          | 51430        | 4949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 5           |                                 |                          |                          | 51530        | 5949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 6           |                                 |                          |                          | 51630        | 6949       | 239.1.1.249              | 239.1.127.249            |

2.2.2.4 OMD Derivatives Standard (non-SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (DS Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 51101 | 1501       | 239.1.1.239              | 239.1.127.239            | 51101 |
|                            |                                                                                                                            | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 51201 | 2501       | 239.1.1.239              | 239.1.127.239            | 51201 |
|                            |                                                                                                                            | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 51301 | 3501       | 239.1.1.239              | 239.1.127.239            | 51301 |
|                            |                                                                                                                            | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 51401 | 4501       | 239.1.1.239              | 239.1.127.239            | 51401 |
|                            |                                                                                                                            | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 51501 | 5501       | 239.1.1.239              | 239.1.127.239            | 51501 |
|                            |                                                                                                                            | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 51601 | 6501       | 239.1.1.239              | 239.1.127.239            | 51601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                     | 239.1.1.227              | 239.1.127.227            | 51100 | 1504       | 239.1.1.248              | 239.1.127.248            | 51100 |
|                            |                                                                                                                            | 2           | 2004                     | 239.1.1.227              | 239.1.127.227            | 51200 | 2504       | 239.1.1.248              | 239.1.127.248            | 51200 |
|                            |                                                                                                                            | 3           | 3004                     | 239.1.1.227              | 239.1.127.227            | 51300 | 3504       | 239.1.1.248              | 239.1.127.248            | 51300 |
|                            |                                                                                                                            | 4           | 4004                     | 239.1.1.227              | 239.1.127.227            | 51400 | 4504       | 239.1.1.248              | 239.1.127.248            | 51400 |
|                            |                                                                                                                            | 5           | 5004                     | 239.1.1.227              | 239.1.127.227            | 51500 | 5504       | 239.1.1.248              | 239.1.127.248            | 51500 |
|                            |                                                                                                                            | 6           | 6004                     | 239.1.1.227              | 239.1.127.227            | 51600 | 6504       | 239.1.1.248              | 239.1.127.248            | 51600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 51102 | 1510       | 239.1.1.239              | 239.1.127.239            | 51102 |
|                            |                                                                                                                            | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 51202 | 2510       | 239.1.1.239              | 239.1.127.239            | 51202 |
|                            |                                                                                                                            | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 51302 | 3510       | 239.1.1.239              | 239.1.127.239            | 51302 |
|                            |                                                                                                                            | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 51402 | 4510       | 239.1.1.239              | 239.1.127.239            | 51402 |
|                            |                                                                                                                            | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 51502 | 5510       | 239.1.1.239              | 239.1.127.239            | 51502 |
|                            |                                                                                                                            | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 51602 | 6510       | 239.1.1.239              | 239.1.127.239            | 51602 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 51104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2019                     | 239.1.1.218              | 239.1.127.218            | 51204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3019                     | 239.1.1.218              | 239.1.127.218            | 51304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4019                     | 239.1.1.218              | 239.1.127.218            | 51404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5019                     | 239.1.1.218              | 239.1.127.218            | 51504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6019                     | 239.1.1.218              | 239.1.127.218            | 51604 |            |                          |                          |       |

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|                                                           |                                                                   |   |      |             |               |       |      |             |               |       |
|-----------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br>(Compressed) | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1029 | 239.1.1.220 | 239.1.127.220 | 51100 | 1529 | 239.1.1.241 | 239.1.127.241 | 51100 |
|                                                           |                                                                   | 2 | 2029 | 239.1.1.220 | 239.1.127.220 | 51200 | 2529 | 239.1.1.241 | 239.1.127.241 | 51200 |
|                                                           |                                                                   | 3 | 3029 | 239.1.1.220 | 239.1.127.220 | 51300 | 3529 | 239.1.1.241 | 239.1.127.241 | 51300 |
|                                                           |                                                                   | 4 | 4029 | 239.1.1.220 | 239.1.127.220 | 51400 | 4529 | 239.1.1.241 | 239.1.127.241 | 51400 |
|                                                           |                                                                   | 5 | 5029 | 239.1.1.220 | 239.1.127.220 | 51500 | 5529 | 239.1.1.241 | 239.1.127.241 | 51500 |
|                                                           |                                                                   | 6 | 6029 | 239.1.1.220 | 239.1.127.220 | 51600 | 6529 | 239.1.1.241 | 239.1.127.241 | 51600 |
| <b>Trade Statistic Channels</b>                           | Trade Statistic (360)                                             | 1 | 1041 | 239.1.1.220 | 239.1.127.220 | 51101 | 1541 | 239.1.1.241 | 239.1.127.241 | 51101 |
|                                                           |                                                                   | 2 | 2041 | 239.1.1.220 | 239.1.127.220 | 51201 | 2541 | 239.1.1.241 | 239.1.127.241 | 51201 |
|                                                           |                                                                   | 3 | 3041 | 239.1.1.220 | 239.1.127.220 | 51301 | 3541 | 239.1.1.241 | 239.1.127.241 | 51301 |
|                                                           |                                                                   | 4 | 4041 | 239.1.1.220 | 239.1.127.220 | 51401 | 4541 | 239.1.1.241 | 239.1.127.241 | 51401 |
|                                                           |                                                                   | 5 | 5041 | 239.1.1.220 | 239.1.127.220 | 51501 | 5541 | 239.1.1.241 | 239.1.127.241 | 51501 |
|                                                           |                                                                   | 6 | 6041 | 239.1.1.220 | 239.1.127.220 | 51601 | 6541 | 239.1.1.241 | 239.1.127.241 | 51601 |
| <b>Market Alert Channels</b>                              | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                           |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                           |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                           |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                           |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                           |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Derivatives DR Signal Channel</b>                      | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.232 | 239.1.127.232 | 51000 |      |             |               |       |

2.2.2.5 OMD Derivatives Standard (SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (DS SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID           | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                      | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002                 | 239.1.1.217              | 239.1.127.217            | 51101 | 1502       | 239.1.1.238              | 239.1.127.238            | 51101 |
|                            |                                                                                                                            | 2           | 2002                 | 239.1.1.217              | 239.1.127.217            | 51201 | 2502       | 239.1.1.238              | 239.1.127.238            | 51201 |
|                            |                                                                                                                            | 3           | 3002                 | 239.1.1.217              | 239.1.127.217            | 51301 | 3502       | 239.1.1.238              | 239.1.127.238            | 51301 |
|                            |                                                                                                                            | 4           | 4002                 | 239.1.1.217              | 239.1.127.217            | 51401 | 4502       | 239.1.1.238              | 239.1.127.238            | 51401 |
|                            |                                                                                                                            | 5           | 5002                 | 239.1.1.217              | 239.1.127.217            | 51501 | 5502       | 239.1.1.238              | 239.1.127.238            | 51501 |
|                            |                                                                                                                            | 6           | 6002                 | 239.1.1.217              | 239.1.127.217            | 51601 | 6502       | 239.1.1.238              | 239.1.127.238            | 51601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005                 | 239.1.1.225              | 239.1.127.225            | 51100 | 1505       | 239.1.1.246              | 239.1.127.246            | 51100 |
|                            |                                                                                                                            | 2           | 2005                 | 239.1.1.225              | 239.1.127.225            | 51200 | 2505       | 239.1.1.246              | 239.1.127.246            | 51200 |
|                            |                                                                                                                            | 3           | 3005                 | 239.1.1.225              | 239.1.127.225            | 51300 | 3505       | 239.1.1.246              | 239.1.127.246            | 51300 |
|                            |                                                                                                                            | 4           | 4005                 | 239.1.1.225              | 239.1.127.225            | 51400 | 4505       | 239.1.1.246              | 239.1.127.246            | 51400 |
|                            |                                                                                                                            | 5           | 5005                 | 239.1.1.225              | 239.1.127.225            | 51500 | 5505       | 239.1.1.246              | 239.1.127.246            | 51500 |
|                            |                                                                                                                            | 6           | 6005                 | 239.1.1.225              | 239.1.127.225            | 51600 | 6505       | 239.1.1.246              | 239.1.127.246            | 51600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011                 | 239.1.1.217              | 239.1.127.217            | 51102 | 1511       | 239.1.1.238              | 239.1.127.238            | 51102 |
|                            |                                                                                                                            | 2           | 2011                 | 239.1.1.217              | 239.1.127.217            | 51202 | 2511       | 239.1.1.238              | 239.1.127.238            | 51202 |
|                            |                                                                                                                            | 3           | 3011                 | 239.1.1.217              | 239.1.127.217            | 51302 | 3511       | 239.1.1.238              | 239.1.127.238            | 51302 |
|                            |                                                                                                                            | 4           | 4011                 | 239.1.1.217              | 239.1.127.217            | 51402 | 4511       | 239.1.1.238              | 239.1.127.238            | 51402 |
|                            |                                                                                                                            | 5           | 5011                 | 239.1.1.217              | 239.1.127.217            | 51502 | 5511       | 239.1.1.238              | 239.1.127.238            | 51502 |
|                            |                                                                                                                            | 6           | 6011                 | 239.1.1.217              | 239.1.127.217            | 51602 | 6511       | 239.1.1.238              | 239.1.127.238            | 51602 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1020                 | 239.1.1.217              | 239.1.127.217            | 51104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2020                 | 239.1.1.217              | 239.1.127.217            | 51204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3020                 | 239.1.1.217              | 239.1.127.217            | 51304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4020                 | 239.1.1.217              | 239.1.127.217            | 51404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5020                 | 239.1.1.217              | 239.1.127.217            | 51504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6020                 | 239.1.1.217              | 239.1.127.217            | 51604 |            |                          |                          |       |

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|                                                                  |                                                                   |   |      |             |               |       |      |             |               |       |
|------------------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br><b>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1030 | 239.1.1.219 | 239.1.127.219 | 51100 | 1530 | 239.1.1.240 | 239.1.127.240 | 51100 |
|                                                                  |                                                                   | 2 | 2030 | 239.1.1.219 | 239.1.127.219 | 51200 | 2530 | 239.1.1.240 | 239.1.127.240 | 51200 |
|                                                                  |                                                                   | 3 | 3030 | 239.1.1.219 | 239.1.127.219 | 51300 | 3530 | 239.1.1.240 | 239.1.127.240 | 51300 |
|                                                                  |                                                                   | 4 | 4030 | 239.1.1.219 | 239.1.127.219 | 51400 | 4530 | 239.1.1.240 | 239.1.127.240 | 51400 |
|                                                                  |                                                                   | 5 | 5030 | 239.1.1.219 | 239.1.127.219 | 51500 | 5530 | 239.1.1.240 | 239.1.127.240 | 51500 |
|                                                                  |                                                                   | 6 | 6030 | 239.1.1.219 | 239.1.127.219 | 51600 | 6530 | 239.1.1.240 | 239.1.127.240 | 51600 |
| <b>Trade Statistic Channels</b>                                  | Trade Statistic (360)                                             | 1 | 1042 | 239.1.1.219 | 239.1.127.219 | 51101 | 1542 | 239.1.1.240 | 239.1.127.240 | 51101 |
|                                                                  |                                                                   | 2 | 2042 | 239.1.1.219 | 239.1.127.219 | 51201 | 2542 | 239.1.1.240 | 239.1.127.240 | 51201 |
|                                                                  |                                                                   | 3 | 3042 | 239.1.1.219 | 239.1.127.219 | 51301 | 3542 | 239.1.1.240 | 239.1.127.240 | 51301 |
|                                                                  |                                                                   | 4 | 4042 | 239.1.1.219 | 239.1.127.219 | 51401 | 4542 | 239.1.1.240 | 239.1.127.240 | 51401 |
|                                                                  |                                                                   | 5 | 5042 | 239.1.1.219 | 239.1.127.219 | 51501 | 5542 | 239.1.1.240 | 239.1.127.240 | 51501 |
|                                                                  |                                                                   | 6 | 6042 | 239.1.1.219 | 239.1.127.219 | 51601 | 6542 | 239.1.1.240 | 239.1.127.240 | 51601 |
| <b>Market Alert Channels</b>                                     | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                                  |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                                  |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                                  |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                                  |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                                  |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Derivatives DR Signal Channel</b>                             | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.197 | 239.1.127.197 | 51000 |      |             |               |       |

2.2.2.6 OMD Derivatives Premium (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (DP Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 51101 | 1501       | 239.1.1.239              | 239.1.127.239            | 51101 |
|                            |                                                                                                                            | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 51201 | 2501       | 239.1.1.239              | 239.1.127.239            | 51201 |
|                            |                                                                                                                            | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 51301 | 3501       | 239.1.1.239              | 239.1.127.239            | 51301 |
|                            |                                                                                                                            | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 51401 | 4501       | 239.1.1.239              | 239.1.127.239            | 51401 |
|                            |                                                                                                                            | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 51501 | 5501       | 239.1.1.239              | 239.1.127.239            | 51501 |
|                            |                                                                                                                            | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 51601 | 6501       | 239.1.1.239              | 239.1.127.239            | 51601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                     | 239.1.1.227              | 239.1.127.227            | 51100 | 1504       | 239.1.1.248              | 239.1.127.248            | 51100 |
|                            |                                                                                                                            | 2           | 2004                     | 239.1.1.227              | 239.1.127.227            | 51200 | 2504       | 239.1.1.248              | 239.1.127.248            | 51200 |
|                            |                                                                                                                            | 3           | 3004                     | 239.1.1.227              | 239.1.127.227            | 51300 | 3504       | 239.1.1.248              | 239.1.127.248            | 51300 |
|                            |                                                                                                                            | 4           | 4004                     | 239.1.1.227              | 239.1.127.227            | 51400 | 4504       | 239.1.1.248              | 239.1.127.248            | 51400 |
|                            |                                                                                                                            | 5           | 5004                     | 239.1.1.227              | 239.1.127.227            | 51500 | 5504       | 239.1.1.248              | 239.1.127.248            | 51500 |
|                            |                                                                                                                            | 6           | 6004                     | 239.1.1.227              | 239.1.127.227            | 51600 | 6504       | 239.1.1.248              | 239.1.127.248            | 51600 |
| Implied Volatility         | Implied Volatility (367)                                                                                                   | 1           | 1007                     | 239.1.1.231              | 239.1.127.231            | 51100 | 1507       | 239.1.1.252              | 239.1.127.252            | 51100 |
|                            |                                                                                                                            | 2           | 2007                     | 239.1.1.231              | 239.1.127.231            | 51200 | 2507       | 239.1.1.252              | 239.1.127.252            | 51200 |
|                            |                                                                                                                            | 3           | 3007                     | 239.1.1.231              | 239.1.127.231            | 51300 | 3507       | 239.1.1.252              | 239.1.127.252            | 51300 |
|                            |                                                                                                                            | 4           | 4007                     | 239.1.1.231              | 239.1.127.231            | 51400 | 4507       | 239.1.1.252              | 239.1.127.252            | 51400 |
|                            |                                                                                                                            | 5           | 5007                     | 239.1.1.231              | 239.1.127.231            | 51500 | 5507       | 239.1.1.252              | 239.1.127.252            | 51500 |
|                            |                                                                                                                            | 6           | 6007                     | 239.1.1.231              | 239.1.127.231            | 51600 | 6507       | 239.1.1.252              | 239.1.127.252            | 51600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 51102 | 1510       | 239.1.1.239              | 239.1.127.239            | 51102 |
|                            |                                                                                                                            | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 51202 | 2510       | 239.1.1.239              | 239.1.127.239            | 51202 |
|                            |                                                                                                                            | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 51302 | 3510       | 239.1.1.239              | 239.1.127.239            | 51302 |
|                            |                                                                                                                            | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 51402 | 4510       | 239.1.1.239              | 239.1.127.239            | 51402 |
|                            |                                                                                                                            | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 51502 | 5510       | 239.1.1.239              | 239.1.127.239            | 51502 |
|                            |                                                                                                                            | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 51602 | 6510       | 239.1.1.239              | 239.1.127.239            | 51602 |
|                            | Quote Request (336)                                                                                                        | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 51104 |            |                          |                          |       |



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|                                        |                                                                                  |   |      |             |               |       |      |             |               |       |
|----------------------------------------|----------------------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| Quote Request Channels                 |                                                                                  | 2 | 2019 | 239.1.1.218 | 239.1.127.218 | 51204 |      |             |               |       |
|                                        |                                                                                  | 3 | 3019 | 239.1.1.218 | 239.1.127.218 | 51304 |      |             |               |       |
|                                        |                                                                                  | 4 | 4019 | 239.1.1.218 | 239.1.127.218 | 51404 |      |             |               |       |
|                                        |                                                                                  | 5 | 5019 | 239.1.1.218 | 239.1.127.218 | 51504 |      |             |               |       |
|                                        |                                                                                  | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 51604 |      |             |               |       |
| Level 2 Price and COP Channels         | Calculate Opening Price (364)<br>Aggregate OrderBook update (353)<br>Trade (350) | 1 | 1026 | 239.1.1.224 | 239.1.127.224 | 51100 | 1526 | 239.1.1.245 | 239.1.127.245 | 51100 |
|                                        |                                                                                  | 2 | 2026 | 239.1.1.224 | 239.1.127.224 | 51200 | 2526 | 239.1.1.245 | 239.1.127.245 | 51200 |
|                                        |                                                                                  | 3 | 3026 | 239.1.1.224 | 239.1.127.224 | 51300 | 3526 | 239.1.1.245 | 239.1.127.245 | 51300 |
|                                        |                                                                                  | 4 | 4026 | 239.1.1.224 | 239.1.127.224 | 51400 | 4526 | 239.1.1.245 | 239.1.127.245 | 51400 |
|                                        |                                                                                  | 5 | 5026 | 239.1.1.224 | 239.1.127.224 | 51500 | 5526 | 239.1.1.245 | 239.1.127.245 | 51500 |
|                                        |                                                                                  | 6 | 6026 | 239.1.1.224 | 239.1.127.224 | 51600 | 6526 | 239.1.1.245 | 239.1.127.245 | 51600 |
| Trade Statistic Channels               | Trade Statistic (360)                                                            | 1 | 1038 | 239.1.1.224 | 239.1.127.224 | 51101 | 1538 | 239.1.1.245 | 239.1.127.245 | 51101 |
|                                        |                                                                                  | 2 | 2038 | 239.1.1.224 | 239.1.127.224 | 51201 | 2538 | 239.1.1.245 | 239.1.127.245 | 51201 |
|                                        |                                                                                  | 3 | 3038 | 239.1.1.224 | 239.1.127.224 | 51301 | 3538 | 239.1.1.245 | 239.1.127.245 | 51301 |
|                                        |                                                                                  | 4 | 4038 | 239.1.1.224 | 239.1.127.224 | 51401 | 4538 | 239.1.1.245 | 239.1.127.245 | 51401 |
|                                        |                                                                                  | 5 | 5038 | 239.1.1.224 | 239.1.127.224 | 51501 | 5538 | 239.1.1.245 | 239.1.127.245 | 51501 |
|                                        |                                                                                  | 6 | 6038 | 239.1.1.224 | 239.1.127.224 | 51601 | 6538 | 239.1.1.245 | 239.1.127.245 | 51601 |
| Market Alert Channels                  | Market Alert (323)                                                               | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                        |                                                                                  | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                        |                                                                                  | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                        |                                                                                  | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                        |                                                                                  | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                        |                                                                                  | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350)                                             | 1 | 1051 | 239.1.1.236 | 239.1.127.236 | 51100 |      |             |               |       |
|                                        |                                                                                  | 2 | 2051 | 239.1.1.236 | 239.1.127.236 | 51200 |      |             |               |       |
|                                        |                                                                                  | 3 | 3051 | 239.1.1.236 | 239.1.127.236 | 51300 |      |             |               |       |
|                                        |                                                                                  | 4 | 4051 | 239.1.1.236 | 239.1.127.236 | 51400 |      |             |               |       |
|                                        |                                                                                  | 5 | 5051 | 239.1.1.236 | 239.1.127.236 | 51500 |      |             |               |       |
|                                        |                                                                                  | 6 | 6051 | 239.1.1.236 | 239.1.127.236 | 51600 |      |             |               |       |

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|                                     |                                   |  |      |             |               |       |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|
| Derivatives<br>DR Signal<br>Channel | Disaster Recovery Signal<br>(105) |  | 1088 | 239.1.1.232 | 239.1.127.232 | 51000 |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|

2.2.2.7 OMD Derivatives Premium (SOM) (streaming)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env1 (DP SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID           | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                      | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002                 | 239.1.1.217              | 239.1.127.217            | 51101 | 1502       | 239.1.1.238              | 239.1.127.238            | 51101 |
|                            |                                                                                                                            | 2           | 2002                 | 239.1.1.217              | 239.1.127.217            | 51201 | 2502       | 239.1.1.238              | 239.1.127.238            | 51201 |
|                            |                                                                                                                            | 3           | 3002                 | 239.1.1.217              | 239.1.127.217            | 51301 | 3502       | 239.1.1.238              | 239.1.127.238            | 51301 |
|                            |                                                                                                                            | 4           | 4002                 | 239.1.1.217              | 239.1.127.217            | 51401 | 4502       | 239.1.1.238              | 239.1.127.238            | 51401 |
|                            |                                                                                                                            | 5           | 5002                 | 239.1.1.217              | 239.1.127.217            | 51501 | 5502       | 239.1.1.238              | 239.1.127.238            | 51501 |
|                            |                                                                                                                            | 6           | 6002                 | 239.1.1.217              | 239.1.127.217            | 51601 | 6502       | 239.1.1.238              | 239.1.127.238            | 51601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005                 | 239.1.1.225              | 239.1.127.225            | 51100 | 1505       | 239.1.1.246              | 239.1.127.246            | 51100 |
|                            |                                                                                                                            | 2           | 2005                 | 239.1.1.225              | 239.1.127.225            | 51200 | 2505       | 239.1.1.246              | 239.1.127.246            | 51200 |
|                            |                                                                                                                            | 3           | 3005                 | 239.1.1.225              | 239.1.127.225            | 51300 | 3505       | 239.1.1.246              | 239.1.127.246            | 51300 |
|                            |                                                                                                                            | 4           | 4005                 | 239.1.1.225              | 239.1.127.225            | 51400 | 4505       | 239.1.1.246              | 239.1.127.246            | 51400 |
|                            |                                                                                                                            | 5           | 5005                 | 239.1.1.225              | 239.1.127.225            | 51500 | 5505       | 239.1.1.246              | 239.1.127.246            | 51500 |
|                            |                                                                                                                            | 6           | 6005                 | 239.1.1.225              | 239.1.127.225            | 51600 | 6505       | 239.1.1.246              | 239.1.127.246            | 51600 |
| Implied Volatility         | Implied Volatility (367)                                                                                                   | 1           | 1008                 | 239.1.1.230              | 239.1.127.230            | 51100 | 1508       | 239.1.1.251              | 239.1.127.251            | 51100 |
|                            |                                                                                                                            | 2           | 2008                 | 239.1.1.230              | 239.1.127.230            | 51200 | 2508       | 239.1.1.251              | 239.1.127.251            | 51200 |
|                            |                                                                                                                            | 3           | 3008                 | 239.1.1.230              | 239.1.127.230            | 51300 | 3508       | 239.1.1.251              | 239.1.127.251            | 51300 |
|                            |                                                                                                                            | 4           | 4008                 | 239.1.1.230              | 239.1.127.230            | 51400 | 4508       | 239.1.1.251              | 239.1.127.251            | 51400 |
|                            |                                                                                                                            | 5           | 5008                 | 239.1.1.230              | 239.1.127.230            | 51500 | 5508       | 239.1.1.251              | 239.1.127.251            | 51500 |
|                            |                                                                                                                            | 6           | 6008                 | 239.1.1.230              | 239.1.127.230            | 51600 | 6508       | 239.1.1.251              | 239.1.127.251            | 51600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011                 | 239.1.1.217              | 239.1.127.217            | 51102 | 1511       | 239.1.1.238              | 239.1.127.238            | 51102 |
|                            |                                                                                                                            | 2           | 2011                 | 239.1.1.217              | 239.1.127.217            | 51202 | 2511       | 239.1.1.238              | 239.1.127.238            | 51202 |
|                            |                                                                                                                            | 3           | 3011                 | 239.1.1.217              | 239.1.127.217            | 51302 | 3511       | 239.1.1.238              | 239.1.127.238            | 51302 |
|                            |                                                                                                                            | 4           | 4011                 | 239.1.1.217              | 239.1.127.217            | 51402 | 4511       | 239.1.1.238              | 239.1.127.238            | 51402 |
|                            |                                                                                                                            | 5           | 5011                 | 239.1.1.217              | 239.1.127.217            | 51502 | 5511       | 239.1.1.238              | 239.1.127.238            | 51502 |
|                            |                                                                                                                            | 6           | 6011                 | 239.1.1.217              | 239.1.127.217            | 51602 | 6511       | 239.1.1.238              | 239.1.127.238            | 51602 |
|                            | Quote Request (336)                                                                                                        | 1           | 1020                 | 239.1.1.217              | 239.1.127.217            | 51104 |            |                          |                          |       |

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|                                        |                                                                                  |   |      |             |               |       |      |             |               |       |
|----------------------------------------|----------------------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| Quote Request Channels                 |                                                                                  | 2 | 2020 | 239.1.1.217 | 239.1.127.217 | 51204 |      |             |               |       |
|                                        |                                                                                  | 3 | 3020 | 239.1.1.217 | 239.1.127.217 | 51304 |      |             |               |       |
|                                        |                                                                                  | 4 | 4020 | 239.1.1.217 | 239.1.127.217 | 51404 |      |             |               |       |
|                                        |                                                                                  | 5 | 5020 | 239.1.1.217 | 239.1.127.217 | 51504 |      |             |               |       |
|                                        |                                                                                  | 6 | 6020 | 239.1.1.217 | 239.1.127.217 | 51604 |      |             |               |       |
| Level 2 Price and COP Channels         | Calculate Opening Price (364)<br>Aggregate OrderBook update (353)<br>Trade (350) | 1 | 1027 | 239.1.1.223 | 239.1.127.223 | 51100 | 1527 | 239.1.1.244 | 239.1.127.244 | 51100 |
|                                        |                                                                                  | 2 | 2027 | 239.1.1.223 | 239.1.127.223 | 51200 | 2527 | 239.1.1.244 | 239.1.127.244 | 51200 |
|                                        |                                                                                  | 3 | 3027 | 239.1.1.223 | 239.1.127.223 | 51300 | 3527 | 239.1.1.244 | 239.1.127.244 | 51300 |
|                                        |                                                                                  | 4 | 4027 | 239.1.1.223 | 239.1.127.223 | 51400 | 4527 | 239.1.1.244 | 239.1.127.244 | 51400 |
|                                        |                                                                                  | 5 | 5027 | 239.1.1.223 | 239.1.127.223 | 51500 | 5527 | 239.1.1.244 | 239.1.127.244 | 51500 |
|                                        |                                                                                  | 6 | 6027 | 239.1.1.223 | 239.1.127.223 | 51600 | 6527 | 239.1.1.244 | 239.1.127.244 | 51600 |
| Trade Statistic Channels               | Trade Statistic (360)                                                            | 1 | 1039 | 239.1.1.223 | 239.1.127.223 | 51101 | 1539 | 239.1.1.244 | 239.1.127.244 | 51101 |
|                                        |                                                                                  | 2 | 2039 | 239.1.1.223 | 239.1.127.223 | 51201 | 2539 | 239.1.1.244 | 239.1.127.244 | 51201 |
|                                        |                                                                                  | 3 | 3039 | 239.1.1.223 | 239.1.127.223 | 51301 | 3539 | 239.1.1.244 | 239.1.127.244 | 51301 |
|                                        |                                                                                  | 4 | 4039 | 239.1.1.223 | 239.1.127.223 | 51401 | 4539 | 239.1.1.244 | 239.1.127.244 | 51401 |
|                                        |                                                                                  | 5 | 5039 | 239.1.1.223 | 239.1.127.223 | 51501 | 5539 | 239.1.1.244 | 239.1.127.244 | 51501 |
|                                        |                                                                                  | 6 | 6039 | 239.1.1.223 | 239.1.127.223 | 51601 | 6539 | 239.1.1.244 | 239.1.127.244 | 51601 |
| Market Alert Channels                  | Market Alert (323)                                                               | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                        |                                                                                  | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                        |                                                                                  | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                        |                                                                                  | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                        |                                                                                  | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                        |                                                                                  | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)                                                            | 1 | 1052 | 239.1.1.235 | 239.1.127.235 | 51100 |      |             |               |       |
|                                        |                                                                                  | 2 | 2052 | 239.1.1.235 | 239.1.127.235 | 51200 |      |             |               |       |
|                                        |                                                                                  | 3 | 3052 | 239.1.1.235 | 239.1.127.235 | 51300 |      |             |               |       |
|                                        |                                                                                  | 4 | 4052 | 239.1.1.235 | 239.1.127.235 | 51400 |      |             |               |       |
|                                        |                                                                                  | 5 | 5052 | 239.1.1.235 | 239.1.127.235 | 51500 |      |             |               |       |
|                                        |                                                                                  | 6 | 6052 | 239.1.1.235 | 239.1.127.235 | 51600 |      |             |               |       |

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|                                     |                                   |  |      |             |               |       |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|
| Derivatives<br>DR Signal<br>Channel | Disaster Recovery Signal<br>(105) |  | 1088 | 239.1.1.232 | 239.1.127.232 | 51000 |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|

2.2.2.8 OMD Derivatives Full Tick (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                                           |             | ODP-TR-Env1 (DF Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                                            | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                                                                           |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                                       | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 51101 | 1501       | 239.1.1.239              | 239.1.127.239            | 51101 |
|                            |                                                                                                                                                                           | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 51201 | 2501       | 239.1.1.239              | 239.1.127.239            | 51201 |
|                            |                                                                                                                                                                           | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 51301 | 3501       | 239.1.1.239              | 239.1.127.239            | 51301 |
|                            |                                                                                                                                                                           | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 51401 | 4501       | 239.1.1.239              | 239.1.127.239            | 51401 |
|                            |                                                                                                                                                                           | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 51501 | 5501       | 239.1.1.239              | 239.1.127.239            | 51501 |
|                            |                                                                                                                                                                           | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 51601 | 6501       | 239.1.1.239              | 239.1.127.239            | 51601 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                                                | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 51102 | 1510       | 239.1.1.239              | 239.1.127.239            | 51102 |
|                            |                                                                                                                                                                           | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 51202 | 2510       | 239.1.1.239              | 239.1.127.239            | 51202 |
|                            |                                                                                                                                                                           | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 51302 | 3510       | 239.1.1.239              | 239.1.127.239            | 51302 |
|                            |                                                                                                                                                                           | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 51402 | 4510       | 239.1.1.239              | 239.1.127.239            | 51402 |
|                            |                                                                                                                                                                           | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 51502 | 5510       | 239.1.1.239              | 239.1.127.239            | 51502 |
|                            |                                                                                                                                                                           | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 51602 | 6510       | 239.1.1.239              | 239.1.127.239            | 51602 |
| Order & Trade Channels     | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>Calculated Opening Price (364)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>Trade (350) | 1           | 1013                     | 239.1.1.222              | 239.1.127.222            | 51100 | 1513       | 239.1.1.243              | 239.1.127.243            | 51100 |
|                            |                                                                                                                                                                           | 2           | 2013                     | 239.1.1.222              | 239.1.127.222            | 51200 | 2513       | 239.1.1.243              | 239.1.127.243            | 51200 |
|                            |                                                                                                                                                                           | 3           | 3013                     | 239.1.1.222              | 239.1.127.222            | 51300 | 3513       | 239.1.1.243              | 239.1.127.243            | 51300 |
|                            |                                                                                                                                                                           | 4           | 4013                     | 239.1.1.222              | 239.1.127.222            | 51400 | 4513       | 239.1.1.243              | 239.1.127.243            | 51400 |
|                            |                                                                                                                                                                           | 5           | 5013                     | 239.1.1.222              | 239.1.127.222            | 51500 | 5513       | 239.1.1.243              | 239.1.127.243            | 51500 |
|                            |                                                                                                                                                                           | 6           | 6013                     | 239.1.1.222              | 239.1.127.222            | 51600 | 6513       | 239.1.1.243              | 239.1.127.243            | 51600 |
| Quote Request Channels     | Quote Request (336)                                                                                                                                                       | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 51104 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 2           | 2019                     | 239.1.1.218              | 239.1.127.218            | 51204 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 3           | 3019                     | 239.1.1.218              | 239.1.127.218            | 51304 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 4           | 4019                     | 239.1.1.218              | 239.1.127.218            | 51404 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 5           | 5019                     | 239.1.1.218              | 239.1.127.218            | 51504 |            |                          |                          |       |

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|                                                   |                                      |   |      |             |               |       |      |             |               |       |
|---------------------------------------------------|--------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                   |                                      | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 51604 |      |             |               |       |
| <b>Market Alert Channels</b>                      | Market Alert (323)                   | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                   |                                      | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                   |                                      | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                   |                                      | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                   |                                      | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                   |                                      | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Trade Amendment &amp; Block Trade Channels</b> | Trade Amendment (356)<br>Trade (350) | 1 | 1051 | 239.1.1.236 | 239.1.127.236 | 51100 |      |             |               |       |
|                                                   |                                      | 2 | 2051 | 239.1.1.236 | 239.1.127.236 | 51200 |      |             |               |       |
|                                                   |                                      | 3 | 3051 | 239.1.1.236 | 239.1.127.236 | 51300 |      |             |               |       |
|                                                   |                                      | 4 | 4051 | 239.1.1.236 | 239.1.127.236 | 51400 |      |             |               |       |
|                                                   |                                      | 5 | 5051 | 239.1.1.236 | 239.1.127.236 | 51500 |      |             |               |       |
|                                                   |                                      | 6 | 6051 | 239.1.1.236 | 239.1.127.236 | 51600 |      |             |               |       |
| <b>Derivatives DR Signal Channel</b>              | Disaster Recovery Signal (105)       |   | 1088 | 239.1.1.232 | 239.1.127.232 | 51000 |      |             |               |       |

2.2.2.9 OMD Derivatives Full Tick (SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                                           |             | ODP-TR-Env1 (DF SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                                            | Partition # | Channel ID           | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                                                                           |             |                      | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                                       | 1           | 1002                 | 239.1.1.217              | 239.1.127.217            | 51101 | 1502       | 239.1.1.238              | 239.1.127.238            | 51101 |
|                            |                                                                                                                                                                           | 2           | 2002                 | 239.1.1.217              | 239.1.127.217            | 51201 | 2502       | 239.1.1.238              | 239.1.127.238            | 51201 |
|                            |                                                                                                                                                                           | 3           | 3002                 | 239.1.1.217              | 239.1.127.217            | 51301 | 3502       | 239.1.1.238              | 239.1.127.238            | 51301 |
|                            |                                                                                                                                                                           | 4           | 4002                 | 239.1.1.217              | 239.1.127.217            | 51401 | 4502       | 239.1.1.238              | 239.1.127.238            | 51401 |
|                            |                                                                                                                                                                           | 5           | 5002                 | 239.1.1.217              | 239.1.127.217            | 51501 | 5502       | 239.1.1.238              | 239.1.127.238            | 51501 |
|                            |                                                                                                                                                                           | 6           | 6002                 | 239.1.1.217              | 239.1.127.217            | 51601 | 6502       | 239.1.1.238              | 239.1.127.238            | 51601 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                                                | 1           | 1011                 | 239.1.1.217              | 239.1.127.217            | 51102 | 1511       | 239.1.1.238              | 239.1.127.238            | 51102 |
|                            |                                                                                                                                                                           | 2           | 2011                 | 239.1.1.217              | 239.1.127.217            | 51202 | 2511       | 239.1.1.238              | 239.1.127.238            | 51202 |
|                            |                                                                                                                                                                           | 3           | 3011                 | 239.1.1.217              | 239.1.127.217            | 51302 | 3511       | 239.1.1.238              | 239.1.127.238            | 51302 |
|                            |                                                                                                                                                                           | 4           | 4011                 | 239.1.1.217              | 239.1.127.217            | 51402 | 4511       | 239.1.1.238              | 239.1.127.238            | 51402 |
|                            |                                                                                                                                                                           | 5           | 5011                 | 239.1.1.217              | 239.1.127.217            | 51502 | 5511       | 239.1.1.238              | 239.1.127.238            | 51502 |
|                            |                                                                                                                                                                           | 6           | 6011                 | 239.1.1.217              | 239.1.127.217            | 51602 | 6511       | 239.1.1.238              | 239.1.127.238            | 51602 |
| Order & Trade Channels     | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>Calculated Opening Price (364)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>Trade (350) | 1           | 1014                 | 239.1.1.221              | 239.1.127.221            | 51100 | 1514       | 239.1.1.242              | 239.1.127.242            | 51100 |
|                            |                                                                                                                                                                           | 2           | 2014                 | 239.1.1.221              | 239.1.127.221            | 51200 | 2514       | 239.1.1.242              | 239.1.127.242            | 51200 |
|                            |                                                                                                                                                                           | 3           | 3014                 | 239.1.1.221              | 239.1.127.221            | 51300 | 3514       | 239.1.1.242              | 239.1.127.242            | 51300 |
|                            |                                                                                                                                                                           | 4           | 4014                 | 239.1.1.221              | 239.1.127.221            | 51400 | 4514       | 239.1.1.242              | 239.1.127.242            | 51400 |
|                            |                                                                                                                                                                           | 5           | 5014                 | 239.1.1.221              | 239.1.127.221            | 51500 | 5514       | 239.1.1.242              | 239.1.127.242            | 51500 |
|                            |                                                                                                                                                                           | 6           | 6014                 | 239.1.1.221              | 239.1.127.221            | 51600 | 6514       | 239.1.1.242              | 239.1.127.242            | 51600 |
| Quote Request Channels     | Quote Request (336)                                                                                                                                                       | 1           | 1020                 | 239.1.1.217              | 239.1.127.217            | 51104 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 2           | 2020                 | 239.1.1.217              | 239.1.127.217            | 51204 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 3           | 3020                 | 239.1.1.217              | 239.1.127.217            | 51304 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 4           | 4020                 | 239.1.1.217              | 239.1.127.217            | 51404 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 5           | 5020                 | 239.1.1.217              | 239.1.127.217            | 51504 |            |                          |                          |       |



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|                                                                   |                                      |   |      |             |               |       |      |             |               |       |
|-------------------------------------------------------------------|--------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                                   |                                      | 6 | 6020 | 239.1.1.217 | 239.1.127.217 | 51604 |      |             |               |       |
| <b>Market<br/>Alert<br/>Channels</b>                              | Market Alert (323)                   | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 51100 | 1549 | 239.1.1.253 | 239.1.127.253 | 51100 |
|                                                                   |                                      | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 51200 | 2549 | 239.1.1.253 | 239.1.127.253 | 51200 |
|                                                                   |                                      | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 51300 | 3549 | 239.1.1.253 | 239.1.127.253 | 51300 |
|                                                                   |                                      | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 51400 | 4549 | 239.1.1.253 | 239.1.127.253 | 51400 |
|                                                                   |                                      | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 51500 | 5549 | 239.1.1.253 | 239.1.127.253 | 51500 |
|                                                                   |                                      | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 51600 | 6549 | 239.1.1.253 | 239.1.127.253 | 51600 |
| <b>Trade<br/>Amendment<br/>&amp; Block<br/>Trade<br/>Channels</b> | Trade Amendment (356)<br>Trade (350) | 1 | 1052 | 239.1.1.235 | 239.1.127.235 | 51100 |      |             |               |       |
|                                                                   |                                      | 2 | 2052 | 239.1.1.235 | 239.1.127.235 | 51200 |      |             |               |       |
|                                                                   |                                      | 3 | 3052 | 239.1.1.235 | 239.1.127.235 | 51300 |      |             |               |       |
|                                                                   |                                      | 4 | 4052 | 239.1.1.235 | 239.1.127.235 | 51400 |      |             |               |       |
|                                                                   |                                      | 5 | 5052 | 239.1.1.235 | 239.1.127.235 | 51500 |      |             |               |       |
|                                                                   |                                      | 6 | 6052 | 239.1.1.235 | 239.1.127.235 | 51600 |      |             |               |       |
| <b>Derivatives<br/>DR Signal<br/>Channel</b>                      | Disaster Recovery Signal<br>(105)    |   | 1088 | 239.1.1.197 | 239.1.127.197 | 51000 |      |             |               |       |

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

| Channel Names and Messages             |                                      |             | ODP-TR-Env1 (DT Non SOM) |                          |                          |              |            |                          |                          |
|----------------------------------------|--------------------------------------|-------------|--------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category             | OMD-D Messages                       | Partition # | Channel ID               | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                                        |                                      |             |                          | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade Channels                         | Trade (350)                          | 1           | 1016                     | 239.1.1.234              | 239.1.127.234            | 51100        |            |                          |                          |
|                                        |                                      | 2           | 2016                     | 239.1.1.234              | 239.1.127.234            | 51200        |            |                          |                          |
|                                        |                                      | 3           | 3016                     | 239.1.1.234              | 239.1.127.234            | 51300        |            |                          |                          |
|                                        |                                      | 4           | 4016                     | 239.1.1.234              | 239.1.127.234            | 51400        |            |                          |                          |
|                                        |                                      | 5           | 5016                     | 239.1.1.234              | 239.1.127.234            | 51500        |            |                          |                          |
|                                        |                                      | 6           | 6016                     | 239.1.1.234              | 239.1.127.234            | 51600        |            |                          |                          |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350) | 1           | 1051                     | 239.1.1.236              | 239.1.127.236            | 51100        |            |                          |                          |
|                                        |                                      | 2           | 2051                     | 239.1.1.236              | 239.1.127.236            | 51200        |            |                          |                          |
|                                        |                                      | 3           | 3051                     | 239.1.1.236              | 239.1.127.236            | 51300        |            |                          |                          |
|                                        |                                      | 4           | 4051                     | 239.1.1.236              | 239.1.127.236            | 51400        |            |                          |                          |
|                                        |                                      | 5           | 5051                     | 239.1.1.236              | 239.1.127.236            | 51500        |            |                          |                          |
|                                        |                                      | 6           | 6051                     | 239.1.1.236              | 239.1.127.236            | 51600        |            |                          |                          |

2.2.2.11 OMD Derivatives Trade (SOM) (streaming)

| Channel Names and Messages             |                                      |             | ODP-TR-Env1 (DT SOM) |                          |                          |              |            |                          |                          |
|----------------------------------------|--------------------------------------|-------------|----------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category             | OMD-D Messages                       | Partition # | Channel ID           | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                                        |                                      |             |                      | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade Channels                         | Trade (350)                          | 1           | 1017                 | 239.1.1.233              | 239.1.127.233            | 51100        |            |                          |                          |
|                                        |                                      | 2           | 2017                 | 239.1.1.233              | 239.1.127.233            | 51200        |            |                          |                          |
|                                        |                                      | 3           | 3017                 | 239.1.1.233              | 239.1.127.233            | 51300        |            |                          |                          |
|                                        |                                      | 4           | 4017                 | 239.1.1.233              | 239.1.127.233            | 51400        |            |                          |                          |
|                                        |                                      | 5           | 5017                 | 239.1.1.233              | 239.1.127.233            | 51500        |            |                          |                          |
|                                        |                                      | 6           | 6017                 | 239.1.1.233              | 239.1.127.233            | 51600        |            |                          |                          |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350) | 1           | 1052                 | 239.1.1.235              | 239.1.127.235            | 51100        |            |                          |                          |
|                                        |                                      | 2           | 2052                 | 239.1.1.235              | 239.1.127.235            | 51200        |            |                          |                          |
|                                        |                                      | 3           | 3052                 | 239.1.1.235              | 239.1.127.235            | 51300        |            |                          |                          |
|                                        |                                      | 4           | 4052                 | 239.1.1.235              | 239.1.127.235            | 51400        |            |                          |                          |
|                                        |                                      | 5           | 5052                 | 239.1.1.235              | 239.1.127.235            | 51500        |            |                          |                          |
|                                        |                                      | 6           | 6052                 | 239.1.1.235              | 239.1.127.235            | 51600        |            |                          |                          |

2.2.2.12 OMD Index (streaming)

| Channel Names and Messages |                                          |             | ODP-TR-Env1 (Index) |                          |                          |       |            |                          |                          |       |
|----------------------------|------------------------------------------|-------------|---------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                           | Partition # | Channel ID          | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                          |             |                     | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Index                      | Index Definition (70)<br>Index Data (71) | HKEX        | 40                  | 239.1.1.87               | 239.1.127.87             | 53551 | 541        | 239.1.1.87               | 239.1.127.87             | 63551 |
|                            |                                          | HSI         | 41                  | 239.1.1.85               | 239.1.127.85             | 53550 | 542        | 239.1.1.85               | 239.1.127.85             | 63550 |
|                            |                                          | CSI         | 42                  | 239.1.1.86               | 239.1.127.86             | 53550 | 543        | 239.1.1.86               | 239.1.127.86             | 63550 |
| Index DR Signal            | Disaster Recovery Signal (105)           | -           | 49                  | 239.1.1.87               | 239.1.127.87             | 53558 |            |                          |                          |       |

#### 2.2.2.13 HKEX OMD Retransmission Unicast Connectivity (For All Non-Index Channels)

A Retransmission Service is provided to recover multicast packet loss in all Non-Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **ODP-TR-Env1**.

| Retransmission Server          | IP Unicast Address |
|--------------------------------|--------------------|
| Primary server in primary site | 10.170.3.160:55455 |

#### 2.2.2.14 HKEX OMD Index Retransmission Unicast Connectivity (For All Index Channels)

A Retransmission Service for Index is provided to recover multicast packet loss in all Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **OMD-Index Testing Environment**.

| Retransmission Server          | IP Unicast Address |
|--------------------------------|--------------------|
| Primary server in primary site | 10.170.3.37:55455  |

## 2.2.3 ODP-TR External Testing Environment 2 (ODP-TR-Env2)

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

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env2 (D-Lite Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID                   | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                              | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                         | 239.1.1.218              | 239.1.127.218            | 52101 | 1901       | 239.1.1.249              | 239.1.127.249            | 52151 |
|                            |                                                                                                                            | 2           | 2001                         | 239.1.1.218              | 239.1.127.218            | 52201 | 2901       | 239.1.1.249              | 239.1.127.249            | 52251 |
|                            |                                                                                                                            | 3           | 3001                         | 239.1.1.218              | 239.1.127.218            | 52301 | 3901       | 239.1.1.249              | 239.1.127.249            | 52351 |
|                            |                                                                                                                            | 4           | 4001                         | 239.1.1.218              | 239.1.127.218            | 52401 | 4901       | 239.1.1.249              | 239.1.127.249            | 52451 |
|                            |                                                                                                                            | 5           | 5001                         | 239.1.1.218              | 239.1.127.218            | 52501 | 5901       | 239.1.1.249              | 239.1.127.249            | 52551 |
|                            |                                                                                                                            | 6           | 6001                         | 239.1.1.218              | 239.1.127.218            | 52601 | 6901       | 239.1.1.249              | 239.1.127.249            | 52651 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                         | 239.1.1.227              | 239.1.127.227            | 52100 | 1904       | 239.1.1.249              | 239.1.127.249            | 52150 |
|                            |                                                                                                                            | 2           | 2004                         | 239.1.1.227              | 239.1.127.227            | 52200 | 2904       | 239.1.1.249              | 239.1.127.249            | 52250 |
|                            |                                                                                                                            | 3           | 3004                         | 239.1.1.227              | 239.1.127.227            | 52300 | 3904       | 239.1.1.249              | 239.1.127.249            | 52350 |
|                            |                                                                                                                            | 4           | 4004                         | 239.1.1.227              | 239.1.127.227            | 52400 | 4904       | 239.1.1.249              | 239.1.127.249            | 52450 |
|                            |                                                                                                                            | 5           | 5004                         | 239.1.1.227              | 239.1.127.227            | 52500 | 5904       | 239.1.1.249              | 239.1.127.249            | 52550 |
|                            |                                                                                                                            | 6           | 6004                         | 239.1.1.227              | 239.1.127.227            | 52600 | 6904       | 239.1.1.249              | 239.1.127.249            | 52650 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                         | 239.1.1.218              | 239.1.127.218            | 52102 | 1910       | 239.1.1.249              | 239.1.127.249            | 52152 |
|                            |                                                                                                                            | 2           | 2010                         | 239.1.1.218              | 239.1.127.218            | 52202 | 2910       | 239.1.1.249              | 239.1.127.249            | 52252 |
|                            |                                                                                                                            | 3           | 3010                         | 239.1.1.218              | 239.1.127.218            | 52302 | 3910       | 239.1.1.249              | 239.1.127.249            | 52352 |
|                            |                                                                                                                            | 4           | 4010                         | 239.1.1.218              | 239.1.127.218            | 52402 | 4910       | 239.1.1.249              | 239.1.127.249            | 52452 |
|                            |                                                                                                                            | 5           | 5010                         | 239.1.1.218              | 239.1.127.218            | 52502 | 5910       | 239.1.1.249              | 239.1.127.249            | 52552 |
|                            |                                                                                                                            | 6           | 6010                         | 239.1.1.218              | 239.1.127.218            | 52602 | 6910       | 239.1.1.249              | 239.1.127.249            | 52652 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1019                         | 239.1.1.218              | 239.1.127.218            | 52104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2019                         | 239.1.1.218              | 239.1.127.218            | 52204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3019                         | 239.1.1.218              | 239.1.127.218            | 52304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4019                         | 239.1.1.218              | 239.1.127.218            | 52404 |            |                          |                          |       |

## OMD-D Connectivity Guide

|                                                        |                                                                   |   |      |             |               |       |      |             |               |       |
|--------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                        |                                                                   | 5 | 5019 | 239.1.1.218 | 239.1.127.218 | 52504 |      |             |               |       |
|                                                        |                                                                   | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 52604 |      |             |               |       |
| <b>Level 2 Price and COP Channels<br/>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1032 | 239.1.1.228 | 239.1.127.228 | 52100 | 1532 | 239.1.1.249 | 239.1.127.249 | 52100 |
|                                                        |                                                                   | 2 | 2032 | 239.1.1.228 | 239.1.127.228 | 52200 | 2532 | 239.1.1.249 | 239.1.127.249 | 52200 |
|                                                        |                                                                   | 3 | 3032 | 239.1.1.228 | 239.1.127.228 | 52300 | 3532 | 239.1.1.249 | 239.1.127.249 | 52300 |
|                                                        |                                                                   | 4 | 4032 | 239.1.1.228 | 239.1.127.228 | 52400 | 3532 | 239.1.1.249 | 239.1.127.249 | 52400 |
|                                                        |                                                                   | 5 | 5032 | 239.1.1.228 | 239.1.127.228 | 52500 | 3532 | 239.1.1.249 | 239.1.127.249 | 52500 |
|                                                        |                                                                   | 6 | 6032 | 239.1.1.228 | 239.1.127.228 | 52600 | 3532 | 239.1.1.249 | 239.1.127.249 | 52600 |
| <b>Trade Statistic Channels</b>                        | Trade Statistic (360)                                             | 1 | 1044 | 239.1.1.228 | 239.1.127.228 | 52101 | 1544 | 239.1.1.249 | 239.1.127.249 | 52101 |
|                                                        |                                                                   | 2 | 2044 | 239.1.1.228 | 239.1.127.228 | 52201 | 2544 | 239.1.1.249 | 239.1.127.249 | 52201 |
|                                                        |                                                                   | 3 | 3044 | 239.1.1.228 | 239.1.127.228 | 52301 | 3544 | 239.1.1.249 | 239.1.127.249 | 52301 |
|                                                        |                                                                   | 4 | 4044 | 239.1.1.228 | 239.1.127.228 | 52401 | 4544 | 239.1.1.249 | 239.1.127.249 | 52401 |
|                                                        |                                                                   | 5 | 5044 | 239.1.1.228 | 239.1.127.228 | 52501 | 5544 | 239.1.1.249 | 239.1.127.249 | 52501 |
|                                                        |                                                                   | 6 | 6044 | 239.1.1.228 | 239.1.127.228 | 52601 | 6544 | 239.1.1.249 | 239.1.127.249 | 52601 |
| <b>Market Alert Channels</b>                           | Market Alert (323)                                                | 1 | 1049 | 239.1.1.132 | 239.1.127.132 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                        |                                                                   | 2 | 2049 | 239.1.1.132 | 239.1.127.132 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                        |                                                                   | 3 | 3049 | 239.1.1.132 | 239.1.127.132 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                        |                                                                   | 4 | 4049 | 239.1.1.132 | 239.1.127.132 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                        |                                                                   | 5 | 5049 | 239.1.1.132 | 239.1.127.132 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                        |                                                                   | 6 | 6049 | 239.1.1.132 | 239.1.127.132 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Derivatives DR Signal Channel</b>                   | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.132 | 239.1.127.132 | 52000 |      |             |               |       |

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

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env2 (D-Lite SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002                     | 239.1.1.217              | 239.1.127.217            | 52101 | 1902       | 239.1.1.247              | 239.1.127.247            | 52151 |
|                            |                                                                                                                            | 2           | 2002                     | 239.1.1.217              | 239.1.127.217            | 52201 | 2902       | 239.1.1.247              | 239.1.127.247            | 52251 |
|                            |                                                                                                                            | 3           | 3002                     | 239.1.1.217              | 239.1.127.217            | 52301 | 3902       | 239.1.1.247              | 239.1.127.247            | 52351 |
|                            |                                                                                                                            | 4           | 4002                     | 239.1.1.217              | 239.1.127.217            | 52401 | 4902       | 239.1.1.247              | 239.1.127.247            | 52451 |
|                            |                                                                                                                            | 5           | 5002                     | 239.1.1.217              | 239.1.127.217            | 52501 | 5902       | 239.1.1.247              | 239.1.127.247            | 52551 |
|                            |                                                                                                                            | 6           | 6002                     | 239.1.1.217              | 239.1.127.217            | 52601 | 6902       | 239.1.1.247              | 239.1.127.247            | 52651 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005                     | 239.1.1.225              | 239.1.127.225            | 52100 | 1905       | 239.1.1.247              | 239.1.127.247            | 52150 |
|                            |                                                                                                                            | 2           | 2005                     | 239.1.1.225              | 239.1.127.225            | 52200 | 2905       | 239.1.1.247              | 239.1.127.247            | 52250 |
|                            |                                                                                                                            | 3           | 3005                     | 239.1.1.225              | 239.1.127.225            | 52300 | 3905       | 239.1.1.247              | 239.1.127.247            | 52350 |
|                            |                                                                                                                            | 4           | 4005                     | 239.1.1.225              | 239.1.127.225            | 52400 | 4905       | 239.1.1.247              | 239.1.127.247            | 52450 |
|                            |                                                                                                                            | 5           | 5005                     | 239.1.1.225              | 239.1.127.225            | 52500 | 5905       | 239.1.1.247              | 239.1.127.247            | 52550 |
|                            |                                                                                                                            | 6           | 6005                     | 239.1.1.225              | 239.1.127.225            | 52600 | 6905       | 239.1.1.247              | 239.1.127.247            | 52650 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011                     | 239.1.1.217              | 239.1.127.217            | 52102 | 1911       | 239.1.1.247              | 239.1.127.247            | 52152 |
|                            |                                                                                                                            | 2           | 2011                     | 239.1.1.217              | 239.1.127.217            | 52202 | 2911       | 239.1.1.247              | 239.1.127.247            | 52252 |
|                            |                                                                                                                            | 3           | 3011                     | 239.1.1.217              | 239.1.127.217            | 52302 | 3911       | 239.1.1.247              | 239.1.127.247            | 52352 |
|                            |                                                                                                                            | 4           | 4011                     | 239.1.1.217              | 239.1.127.217            | 52402 | 4911       | 239.1.1.247              | 239.1.127.247            | 52452 |
|                            |                                                                                                                            | 5           | 5011                     | 239.1.1.217              | 239.1.127.217            | 52502 | 5911       | 239.1.1.247              | 239.1.127.247            | 52552 |
|                            |                                                                                                                            | 6           | 6011                     | 239.1.1.217              | 239.1.127.217            | 52602 | 6911       | 239.1.1.247              | 239.1.127.247            | 52652 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1020                     | 239.1.1.217              | 239.1.127.217            | 52104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2020                     | 239.1.1.217              | 239.1.127.217            | 52204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3020                     | 239.1.1.217              | 239.1.127.217            | 52304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4020                     | 239.1.1.217              | 239.1.127.217            | 52404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5020                     | 239.1.1.217              | 239.1.127.217            | 52504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6020                     | 239.1.1.217              | 239.1.127.217            | 52604 |            |                          |                          |       |

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|                                                                  |                                                                   |   |      |             |               |       |      |             |               |       |
|------------------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br><b>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1033 | 239.1.1.226 | 239.1.127.226 | 52100 | 1533 | 239.1.1.247 | 239.1.127.247 | 52100 |
|                                                                  |                                                                   | 2 | 2033 | 239.1.1.226 | 239.1.127.226 | 52200 | 2533 | 239.1.1.247 | 239.1.127.247 | 52200 |
|                                                                  |                                                                   | 3 | 3033 | 239.1.1.226 | 239.1.127.226 | 52300 | 3533 | 239.1.1.247 | 239.1.127.247 | 52300 |
|                                                                  |                                                                   | 4 | 4033 | 239.1.1.226 | 239.1.127.226 | 52400 | 4533 | 239.1.1.247 | 239.1.127.247 | 52400 |
|                                                                  |                                                                   | 5 | 5033 | 239.1.1.226 | 239.1.127.226 | 52500 | 5533 | 239.1.1.247 | 239.1.127.247 | 52500 |
|                                                                  |                                                                   | 6 | 6033 | 239.1.1.226 | 239.1.127.226 | 52600 | 6533 | 239.1.1.247 | 239.1.127.247 | 52600 |
| <b>Trade Statistic Channels</b>                                  | Trade Statistic (360)                                             | 1 | 1045 | 239.1.1.226 | 239.1.127.226 | 52101 | 1545 | 239.1.1.247 | 239.1.127.247 | 52101 |
|                                                                  |                                                                   | 2 | 2045 | 239.1.1.226 | 239.1.127.226 | 52201 | 2545 | 239.1.1.247 | 239.1.127.247 | 52201 |
|                                                                  |                                                                   | 3 | 3045 | 239.1.1.226 | 239.1.127.226 | 52301 | 3545 | 239.1.1.247 | 239.1.127.247 | 52301 |
|                                                                  |                                                                   | 4 | 4045 | 239.1.1.226 | 239.1.127.226 | 52401 | 4545 | 239.1.1.247 | 239.1.127.247 | 52401 |
|                                                                  |                                                                   | 5 | 5045 | 239.1.1.226 | 239.1.127.226 | 52501 | 5545 | 239.1.1.247 | 239.1.127.247 | 52501 |
|                                                                  |                                                                   | 6 | 6045 | 239.1.1.226 | 239.1.127.226 | 52601 | 6545 | 239.1.1.247 | 239.1.127.247 | 52601 |
| <b>Market Alert Channels</b>                                     | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                                  |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                                  |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                                  |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                                  |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                                  |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Derivatives DR Signal Channel</b>                             | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.232 | 239.1.127.232 | 52000 |      |             |               |       |



2.2.3.3 OMD Derivatives Lite – Order Feed (snapshot)

| Channel Names and Messages |                 |             | ODP-TR-Env2 (OrderFeed Non SOM) |                          |                          |              |            |                          |                          |
|----------------------------|-----------------|-------------|---------------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category | OMD-D Messages  | Partition # | Channel ID                      | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                            |                 |             |                                 | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Order Feed Channel         | Add Order (330) | 1           |                                 |                          |                          | 52130        | 1949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 2           |                                 |                          |                          | 52230        | 2949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 3           |                                 |                          |                          | 52330        | 3949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 4           |                                 |                          |                          | 52430        | 4949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 5           |                                 |                          |                          | 52530        | 5949       | 239.1.1.249              | 239.1.127.249            |
|                            |                 | 6           |                                 |                          |                          | 52630        | 6949       | 239.1.1.249              | 239.1.127.249            |

2.2.3.4 OMD Derivatives Standard (non-SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env2 (DS Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 52101 | 1501       | 239.1.1.239              | 239.1.127.239            | 52101 |
|                            |                                                                                                                            | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 52201 | 2501       | 239.1.1.239              | 239.1.127.239            | 52201 |
|                            |                                                                                                                            | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 52301 | 3501       | 239.1.1.239              | 239.1.127.239            | 52301 |
|                            |                                                                                                                            | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 52401 | 4501       | 239.1.1.239              | 239.1.127.239            | 52401 |
|                            |                                                                                                                            | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 52501 | 5501       | 239.1.1.239              | 239.1.127.239            | 52501 |
|                            |                                                                                                                            | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 52601 | 6501       | 239.1.1.239              | 239.1.127.239            | 52601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                     | 239.1.1.227              | 239.1.127.227            | 52100 | 1504       | 239.1.1.248              | 239.1.127.248            | 52100 |
|                            |                                                                                                                            | 2           | 2004                     | 239.1.1.227              | 239.1.127.227            | 52200 | 2504       | 239.1.1.248              | 239.1.127.248            | 52200 |
|                            |                                                                                                                            | 3           | 3004                     | 239.1.1.227              | 239.1.127.227            | 52300 | 3504       | 239.1.1.248              | 239.1.127.248            | 52300 |
|                            |                                                                                                                            | 4           | 4004                     | 239.1.1.227              | 239.1.127.227            | 52400 | 4504       | 239.1.1.248              | 239.1.127.248            | 52400 |
|                            |                                                                                                                            | 5           | 5004                     | 239.1.1.227              | 239.1.127.227            | 52500 | 5504       | 239.1.1.248              | 239.1.127.248            | 52500 |
|                            |                                                                                                                            | 6           | 6004                     | 239.1.1.227              | 239.1.127.227            | 52600 | 6504       | 239.1.1.248              | 239.1.127.248            | 52600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 52102 | 1510       | 239.1.1.239              | 239.1.127.239            | 52102 |
|                            |                                                                                                                            | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 52202 | 2510       | 239.1.1.239              | 239.1.127.239            | 52202 |
|                            |                                                                                                                            | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 52302 | 3510       | 239.1.1.239              | 239.1.127.239            | 52302 |
|                            |                                                                                                                            | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 52402 | 4510       | 239.1.1.239              | 239.1.127.239            | 52402 |
|                            |                                                                                                                            | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 52502 | 5510       | 239.1.1.239              | 239.1.127.239            | 52502 |
|                            |                                                                                                                            | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 52602 | 6510       | 239.1.1.239              | 239.1.127.239            | 52602 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 52104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2019                     | 239.1.1.218              | 239.1.127.218            | 52204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3019                     | 239.1.1.218              | 239.1.127.218            | 52304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4019                     | 239.1.1.218              | 239.1.127.218            | 52404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5019                     | 239.1.1.218              | 239.1.127.218            | 52504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6019                     | 239.1.1.218              | 239.1.127.218            | 52604 |            |                          |                          |       |

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|                                                                  |                                                                   |   |      |             |               |       |      |             |               |       |
|------------------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br><b>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1029 | 239.1.1.220 | 239.1.127.220 | 52100 | 1529 | 239.1.1.241 | 239.1.127.241 | 52100 |
|                                                                  |                                                                   | 2 | 2029 | 239.1.1.220 | 239.1.127.220 | 52200 | 2529 | 239.1.1.241 | 239.1.127.241 | 52200 |
|                                                                  |                                                                   | 3 | 3029 | 239.1.1.220 | 239.1.127.220 | 52300 | 3529 | 239.1.1.241 | 239.1.127.241 | 52300 |
|                                                                  |                                                                   | 4 | 4029 | 239.1.1.220 | 239.1.127.220 | 52400 | 4529 | 239.1.1.241 | 239.1.127.241 | 52400 |
|                                                                  |                                                                   | 5 | 5029 | 239.1.1.220 | 239.1.127.220 | 52500 | 5529 | 239.1.1.241 | 239.1.127.241 | 52500 |
|                                                                  |                                                                   | 6 | 6029 | 239.1.1.220 | 239.1.127.220 | 52600 | 6529 | 239.1.1.241 | 239.1.127.241 | 52600 |
| <b>Trade Statistic Channels</b>                                  | Trade Statistic (360)                                             | 1 | 1041 | 239.1.1.220 | 239.1.127.220 | 52101 | 1541 | 239.1.1.241 | 239.1.127.241 | 52101 |
|                                                                  |                                                                   | 2 | 2041 | 239.1.1.220 | 239.1.127.220 | 52201 | 2541 | 239.1.1.241 | 239.1.127.241 | 52201 |
|                                                                  |                                                                   | 3 | 3041 | 239.1.1.220 | 239.1.127.220 | 52301 | 3541 | 239.1.1.241 | 239.1.127.241 | 52301 |
|                                                                  |                                                                   | 4 | 4041 | 239.1.1.220 | 239.1.127.220 | 52401 | 4541 | 239.1.1.241 | 239.1.127.241 | 52401 |
|                                                                  |                                                                   | 5 | 5041 | 239.1.1.220 | 239.1.127.220 | 52501 | 5541 | 239.1.1.241 | 239.1.127.241 | 52501 |
|                                                                  |                                                                   | 6 | 6041 | 239.1.1.220 | 239.1.127.220 | 52601 | 6541 | 239.1.1.241 | 239.1.127.241 | 52601 |
| <b>Market Alert Channels</b>                                     | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                                  |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                                  |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                                  |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                                  |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                                  |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Derivatives DR Signal Channel</b>                             | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.232 | 239.1.127.232 | 52000 |      |             |               |       |

2.2.3.5 OMD Derivatives Standard (SOM) (conflated)

| Channel Names and Messages |                                                                                                                            |             |            | ODP-TR-Env2 (DS SOM)     |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID | Real Time Channels       |                          |       | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |            | Line A Multicast Address | Line B Multicast Address | Ports |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002       | 239.1.1.217              | 239.1.127.217            | 52101 | 1502       | 239.1.1.238              | 239.1.127.238            | 52101 |
|                            |                                                                                                                            | 2           | 2002       | 239.1.1.217              | 239.1.127.217            | 52201 | 2502       | 239.1.1.238              | 239.1.127.238            | 52201 |
|                            |                                                                                                                            | 3           | 3002       | 239.1.1.217              | 239.1.127.217            | 52301 | 3502       | 239.1.1.238              | 239.1.127.238            | 52301 |
|                            |                                                                                                                            | 4           | 4002       | 239.1.1.217              | 239.1.127.217            | 52401 | 4502       | 239.1.1.238              | 239.1.127.238            | 52401 |
|                            |                                                                                                                            | 5           | 5002       | 239.1.1.217              | 239.1.127.217            | 52501 | 5502       | 239.1.1.238              | 239.1.127.238            | 52501 |
|                            |                                                                                                                            | 6           | 6002       | 239.1.1.217              | 239.1.127.217            | 52601 | 6502       | 239.1.1.238              | 239.1.127.238            | 52601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005       | 239.1.1.225              | 239.1.127.225            | 52100 | 1505       | 239.1.1.246              | 239.1.127.246            | 52100 |
|                            |                                                                                                                            | 2           | 2005       | 239.1.1.225              | 239.1.127.225            | 52200 | 2505       | 239.1.1.246              | 239.1.127.246            | 52200 |
|                            |                                                                                                                            | 3           | 3005       | 239.1.1.225              | 239.1.127.225            | 52300 | 3505       | 239.1.1.246              | 239.1.127.246            | 52300 |
|                            |                                                                                                                            | 4           | 4005       | 239.1.1.225              | 239.1.127.225            | 52400 | 4505       | 239.1.1.246              | 239.1.127.246            | 52400 |
|                            |                                                                                                                            | 5           | 5005       | 239.1.1.225              | 239.1.127.225            | 52500 | 5505       | 239.1.1.246              | 239.1.127.246            | 52500 |
|                            |                                                                                                                            | 6           | 6005       | 239.1.1.225              | 239.1.127.225            | 52600 | 6505       | 239.1.1.246              | 239.1.127.246            | 52600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011       | 239.1.1.217              | 239.1.127.217            | 52102 | 1511       | 239.1.1.238              | 239.1.127.238            | 52102 |
|                            |                                                                                                                            | 2           | 2011       | 239.1.1.217              | 239.1.127.217            | 52202 | 2511       | 239.1.1.238              | 239.1.127.238            | 52202 |
|                            |                                                                                                                            | 3           | 3011       | 239.1.1.217              | 239.1.127.217            | 52302 | 3511       | 239.1.1.238              | 239.1.127.238            | 52302 |
|                            |                                                                                                                            | 4           | 4011       | 239.1.1.217              | 239.1.127.217            | 52402 | 4511       | 239.1.1.238              | 239.1.127.238            | 52402 |
|                            |                                                                                                                            | 5           | 5011       | 239.1.1.217              | 239.1.127.217            | 52502 | 5511       | 239.1.1.238              | 239.1.127.238            | 52502 |
|                            |                                                                                                                            | 6           | 6011       | 239.1.1.217              | 239.1.127.217            | 52602 | 6511       | 239.1.1.238              | 239.1.127.238            | 52602 |
| Quote Request Channels     | Quote Request (336)                                                                                                        | 1           | 1020       | 239.1.1.217              | 239.1.127.217            | 52104 |            |                          |                          |       |
|                            |                                                                                                                            | 2           | 2020       | 239.1.1.217              | 239.1.127.217            | 52204 |            |                          |                          |       |
|                            |                                                                                                                            | 3           | 3020       | 239.1.1.217              | 239.1.127.217            | 52304 |            |                          |                          |       |
|                            |                                                                                                                            | 4           | 4020       | 239.1.1.217              | 239.1.127.217            | 52404 |            |                          |                          |       |
|                            |                                                                                                                            | 5           | 5020       | 239.1.1.217              | 239.1.127.217            | 52504 |            |                          |                          |       |
|                            |                                                                                                                            | 6           | 6020       | 239.1.1.217              | 239.1.127.217            | 52604 |            |                          |                          |       |

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|                                                                  |                                                                   |   |      |             |               |       |      |             |               |       |
|------------------------------------------------------------------|-------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| <b>Level 2 Price and COP Channels</b><br><br><b>(Compressed)</b> | Calculate Opening Price (364)<br>Aggregate OrderBook update (353) | 1 | 1030 | 239.1.1.219 | 239.1.127.219 | 52100 | 1530 | 239.1.1.240 | 239.1.127.240 | 52100 |
|                                                                  |                                                                   | 2 | 2030 | 239.1.1.219 | 239.1.127.219 | 52200 | 2530 | 239.1.1.240 | 239.1.127.240 | 52200 |
|                                                                  |                                                                   | 3 | 3030 | 239.1.1.219 | 239.1.127.219 | 52300 | 3530 | 239.1.1.240 | 239.1.127.240 | 52300 |
|                                                                  |                                                                   | 4 | 4030 | 239.1.1.219 | 239.1.127.219 | 52400 | 4530 | 239.1.1.240 | 239.1.127.240 | 52400 |
|                                                                  |                                                                   | 5 | 5030 | 239.1.1.219 | 239.1.127.219 | 52500 | 5530 | 239.1.1.240 | 239.1.127.240 | 52500 |
|                                                                  |                                                                   | 6 | 6030 | 239.1.1.219 | 239.1.127.219 | 52600 | 6530 | 239.1.1.240 | 239.1.127.240 | 52600 |
| <b>Trade Statistic Channels</b>                                  | Trade Statistic (360)                                             | 1 | 1042 | 239.1.1.219 | 239.1.127.219 | 52101 | 1542 | 239.1.1.240 | 239.1.127.240 | 52101 |
|                                                                  |                                                                   | 2 | 2042 | 239.1.1.219 | 239.1.127.219 | 52201 | 2542 | 239.1.1.240 | 239.1.127.240 | 52201 |
|                                                                  |                                                                   | 3 | 3042 | 239.1.1.219 | 239.1.127.219 | 52301 | 3542 | 239.1.1.240 | 239.1.127.240 | 52301 |
|                                                                  |                                                                   | 4 | 4042 | 239.1.1.219 | 239.1.127.219 | 52401 | 4542 | 239.1.1.240 | 239.1.127.240 | 52401 |
|                                                                  |                                                                   | 5 | 5042 | 239.1.1.219 | 239.1.127.219 | 52501 | 5542 | 239.1.1.240 | 239.1.127.240 | 52501 |
|                                                                  |                                                                   | 6 | 6042 | 239.1.1.219 | 239.1.127.219 | 52601 | 6542 | 239.1.1.240 | 239.1.127.240 | 52601 |
| <b>Market Alert Channels</b>                                     | Market Alert (323)                                                | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                                  |                                                                   | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                                  |                                                                   | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                                  |                                                                   | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                                  |                                                                   | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                                  |                                                                   | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Derivatives DR Signal Channel</b>                             | Disaster Recovery Signal (105)                                    |   | 1088 | 239.1.1.197 | 239.1.127.197 | 52000 |      |             |               |       |

2.2.3.6 OMD Derivatives Premium (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env2 (DP Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 52101 | 1501       | 239.1.1.239              | 239.1.127.239            | 52101 |
|                            |                                                                                                                            | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 52201 | 2501       | 239.1.1.239              | 239.1.127.239            | 52201 |
|                            |                                                                                                                            | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 52301 | 3501       | 239.1.1.239              | 239.1.127.239            | 52301 |
|                            |                                                                                                                            | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 52401 | 4501       | 239.1.1.239              | 239.1.127.239            | 52401 |
|                            |                                                                                                                            | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 52501 | 5501       | 239.1.1.239              | 239.1.127.239            | 52501 |
|                            |                                                                                                                            | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 52601 | 6501       | 239.1.1.239              | 239.1.127.239            | 52601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1004                     | 239.1.1.227              | 239.1.127.227            | 52100 | 1504       | 239.1.1.248              | 239.1.127.248            | 52100 |
|                            |                                                                                                                            | 2           | 2004                     | 239.1.1.227              | 239.1.127.227            | 52200 | 2504       | 239.1.1.248              | 239.1.127.248            | 52200 |
|                            |                                                                                                                            | 3           | 3004                     | 239.1.1.227              | 239.1.127.227            | 52300 | 3504       | 239.1.1.248              | 239.1.127.248            | 52300 |
|                            |                                                                                                                            | 4           | 4004                     | 239.1.1.227              | 239.1.127.227            | 52400 | 4504       | 239.1.1.248              | 239.1.127.248            | 52400 |
|                            |                                                                                                                            | 5           | 5004                     | 239.1.1.227              | 239.1.127.227            | 52500 | 5504       | 239.1.1.248              | 239.1.127.248            | 52500 |
|                            |                                                                                                                            | 6           | 6004                     | 239.1.1.227              | 239.1.127.227            | 52600 | 6504       | 239.1.1.248              | 239.1.127.248            | 52600 |
| Implied Volatility         | Implied Volatility (367)                                                                                                   | 1           | 1007                     | 239.1.1.231              | 239.1.127.231            | 52100 | 1507       | 239.1.1.252              | 239.1.127.252            | 52100 |
|                            |                                                                                                                            | 2           | 2007                     | 239.1.1.231              | 239.1.127.231            | 52200 | 2507       | 239.1.1.252              | 239.1.127.252            | 52200 |
|                            |                                                                                                                            | 3           | 3007                     | 239.1.1.231              | 239.1.127.231            | 52300 | 3507       | 239.1.1.252              | 239.1.127.252            | 52300 |
|                            |                                                                                                                            | 4           | 4007                     | 239.1.1.231              | 239.1.127.231            | 52400 | 4507       | 239.1.1.252              | 239.1.127.252            | 52400 |
|                            |                                                                                                                            | 5           | 5007                     | 239.1.1.231              | 239.1.127.231            | 52500 | 5507       | 239.1.1.252              | 239.1.127.252            | 52500 |
|                            |                                                                                                                            | 6           | 6007                     | 239.1.1.231              | 239.1.127.231            | 52600 | 6507       | 239.1.1.252              | 239.1.127.252            | 52600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 52102 | 1510       | 239.1.1.239              | 239.1.127.239            | 52102 |
|                            |                                                                                                                            | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 52202 | 2510       | 239.1.1.239              | 239.1.127.239            | 52202 |
|                            |                                                                                                                            | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 52302 | 3510       | 239.1.1.239              | 239.1.127.239            | 52302 |
|                            |                                                                                                                            | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 52402 | 4510       | 239.1.1.239              | 239.1.127.239            | 52402 |
|                            |                                                                                                                            | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 52502 | 5510       | 239.1.1.239              | 239.1.127.239            | 52502 |
|                            |                                                                                                                            | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 52602 | 6510       | 239.1.1.239              | 239.1.127.239            | 52602 |
|                            | Quote Request (336)                                                                                                        | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 52104 |            |                          |                          |       |

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|                                        |                                                                                  |   |      |             |               |       |      |             |               |       |
|----------------------------------------|----------------------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| Quote Request Channels                 |                                                                                  | 2 | 2019 | 239.1.1.218 | 239.1.127.218 | 52204 |      |             |               |       |
|                                        |                                                                                  | 3 | 3019 | 239.1.1.218 | 239.1.127.218 | 52304 |      |             |               |       |
|                                        |                                                                                  | 4 | 4019 | 239.1.1.218 | 239.1.127.218 | 52404 |      |             |               |       |
|                                        |                                                                                  | 5 | 5019 | 239.1.1.218 | 239.1.127.218 | 52504 |      |             |               |       |
|                                        |                                                                                  | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 52604 |      |             |               |       |
| Level 2 Price and COP Channels         | Calculate Opening Price (364)<br>Aggregate OrderBook update (353)<br>Trade (350) | 1 | 1026 | 239.1.1.224 | 239.1.127.224 | 52100 | 1526 | 239.1.1.245 | 239.1.127.245 | 52100 |
|                                        |                                                                                  | 2 | 2026 | 239.1.1.224 | 239.1.127.224 | 52200 | 2526 | 239.1.1.245 | 239.1.127.245 | 52200 |
|                                        |                                                                                  | 3 | 3026 | 239.1.1.224 | 239.1.127.224 | 52300 | 3526 | 239.1.1.245 | 239.1.127.245 | 52300 |
|                                        |                                                                                  | 4 | 4026 | 239.1.1.224 | 239.1.127.224 | 52400 | 4526 | 239.1.1.245 | 239.1.127.245 | 52400 |
|                                        |                                                                                  | 5 | 5026 | 239.1.1.224 | 239.1.127.224 | 52500 | 5526 | 239.1.1.245 | 239.1.127.245 | 52500 |
|                                        |                                                                                  | 6 | 6026 | 239.1.1.224 | 239.1.127.224 | 52600 | 6526 | 239.1.1.245 | 239.1.127.245 | 52600 |
| Trade Statistic Channels               | Trade Statistic (360)                                                            | 1 | 1038 | 239.1.1.224 | 239.1.127.224 | 52101 | 1538 | 239.1.1.245 | 239.1.127.245 | 52101 |
|                                        |                                                                                  | 2 | 2038 | 239.1.1.224 | 239.1.127.224 | 52201 | 2538 | 239.1.1.245 | 239.1.127.245 | 52201 |
|                                        |                                                                                  | 3 | 3038 | 239.1.1.224 | 239.1.127.224 | 52301 | 3538 | 239.1.1.245 | 239.1.127.245 | 52301 |
|                                        |                                                                                  | 4 | 4038 | 239.1.1.224 | 239.1.127.224 | 52401 | 4538 | 239.1.1.245 | 239.1.127.245 | 52401 |
|                                        |                                                                                  | 5 | 5038 | 239.1.1.224 | 239.1.127.224 | 52501 | 5538 | 239.1.1.245 | 239.1.127.245 | 52501 |
|                                        |                                                                                  | 6 | 6038 | 239.1.1.224 | 239.1.127.224 | 52601 | 6538 | 239.1.1.245 | 239.1.127.245 | 52601 |
| Market Alert Channels                  | Market Alert (323)                                                               | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                        |                                                                                  | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                        |                                                                                  | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                        |                                                                                  | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                        |                                                                                  | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                        |                                                                                  | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350)                                             | 1 | 1051 | 239.1.1.236 | 239.1.127.236 | 52100 |      |             |               |       |
|                                        |                                                                                  | 2 | 2051 | 239.1.1.236 | 239.1.127.236 | 52200 |      |             |               |       |
|                                        |                                                                                  | 3 | 3051 | 239.1.1.236 | 239.1.127.236 | 52300 |      |             |               |       |
|                                        |                                                                                  | 4 | 4051 | 239.1.1.236 | 239.1.127.236 | 52400 |      |             |               |       |
|                                        |                                                                                  | 5 | 5051 | 239.1.1.236 | 239.1.127.236 | 52500 |      |             |               |       |
|                                        |                                                                                  | 6 | 6051 | 239.1.1.236 | 239.1.127.236 | 52600 |      |             |               |       |

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|                                     |                                   |  |      |             |               |       |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|
| Derivatives<br>DR Signal<br>Channel | Disaster Recovery Signal<br>(105) |  | 1088 | 239.1.1.232 | 239.1.127.232 | 52000 |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|



2.2.3.7 OMD Derivatives Premium (SOM) (streaming)

| Channel Names and Messages |                                                                                                                            |             | ODP-TR-Env2 (DP SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                             | Partition # | Channel ID           | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                            |             |                      | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)        | 1           | 1002                 | 239.1.1.217              | 239.1.127.217            | 52101 | 1502       | 239.1.1.238              | 239.1.127.238            | 52101 |
|                            |                                                                                                                            | 2           | 2002                 | 239.1.1.217              | 239.1.127.217            | 52201 | 2502       | 239.1.1.238              | 239.1.127.238            | 52201 |
|                            |                                                                                                                            | 3           | 3002                 | 239.1.1.217              | 239.1.127.217            | 52301 | 3502       | 239.1.1.238              | 239.1.127.238            | 52301 |
|                            |                                                                                                                            | 4           | 4002                 | 239.1.1.217              | 239.1.127.217            | 52401 | 4502       | 239.1.1.238              | 239.1.127.238            | 52401 |
|                            |                                                                                                                            | 5           | 5002                 | 239.1.1.217              | 239.1.127.217            | 52501 | 5502       | 239.1.1.238              | 239.1.127.238            | 52501 |
|                            |                                                                                                                            | 6           | 6002                 | 239.1.1.217              | 239.1.127.217            | 52601 | 6502       | 239.1.1.238              | 239.1.127.238            | 52601 |
| Open Interest              | Open Interest (366)                                                                                                        | 1           | 1005                 | 239.1.1.225              | 239.1.127.225            | 52100 | 1505       | 239.1.1.246              | 239.1.127.246            | 52100 |
|                            |                                                                                                                            | 2           | 2005                 | 239.1.1.225              | 239.1.127.225            | 52200 | 2505       | 239.1.1.246              | 239.1.127.246            | 52200 |
|                            |                                                                                                                            | 3           | 3005                 | 239.1.1.225              | 239.1.127.225            | 52300 | 3505       | 239.1.1.246              | 239.1.127.246            | 52300 |
|                            |                                                                                                                            | 4           | 4005                 | 239.1.1.225              | 239.1.127.225            | 52400 | 4505       | 239.1.1.246              | 239.1.127.246            | 52400 |
|                            |                                                                                                                            | 5           | 5005                 | 239.1.1.225              | 239.1.127.225            | 52500 | 5505       | 239.1.1.246              | 239.1.127.246            | 52500 |
|                            |                                                                                                                            | 6           | 6005                 | 239.1.1.225              | 239.1.127.225            | 52600 | 6505       | 239.1.1.246              | 239.1.127.246            | 52600 |
| Implied Volatility         | Implied Volatility (367)                                                                                                   | 1           | 1008                 | 239.1.1.230              | 239.1.127.230            | 52100 | 1508       | 239.1.1.251              | 239.1.127.251            | 52100 |
|                            |                                                                                                                            | 2           | 2008                 | 239.1.1.230              | 239.1.127.230            | 52200 | 2508       | 239.1.1.251              | 239.1.127.251            | 52200 |
|                            |                                                                                                                            | 3           | 3008                 | 239.1.1.230              | 239.1.127.230            | 52300 | 3508       | 239.1.1.251              | 239.1.127.251            | 52300 |
|                            |                                                                                                                            | 4           | 4008                 | 239.1.1.230              | 239.1.127.230            | 52400 | 4508       | 239.1.1.251              | 239.1.127.251            | 52400 |
|                            |                                                                                                                            | 5           | 5008                 | 239.1.1.230              | 239.1.127.230            | 52500 | 5508       | 239.1.1.251              | 239.1.127.251            | 52500 |
|                            |                                                                                                                            | 6           | 6008                 | 239.1.1.230              | 239.1.127.230            | 52600 | 6508       | 239.1.1.251              | 239.1.127.251            | 52600 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325) | 1           | 1011                 | 239.1.1.217              | 239.1.127.217            | 52102 | 1511       | 239.1.1.238              | 239.1.127.238            | 52102 |
|                            |                                                                                                                            | 2           | 2011                 | 239.1.1.217              | 239.1.127.217            | 52202 | 2511       | 239.1.1.238              | 239.1.127.238            | 52202 |
|                            |                                                                                                                            | 3           | 3011                 | 239.1.1.217              | 239.1.127.217            | 52302 | 3511       | 239.1.1.238              | 239.1.127.238            | 52302 |
|                            |                                                                                                                            | 4           | 4011                 | 239.1.1.217              | 239.1.127.217            | 52402 | 4511       | 239.1.1.238              | 239.1.127.238            | 52402 |
|                            |                                                                                                                            | 5           | 5011                 | 239.1.1.217              | 239.1.127.217            | 52502 | 5511       | 239.1.1.238              | 239.1.127.238            | 52502 |
|                            |                                                                                                                            | 6           | 6011                 | 239.1.1.217              | 239.1.127.217            | 52602 | 6511       | 239.1.1.238              | 239.1.127.238            | 52602 |
|                            | Quote Request (336)                                                                                                        | 1           | 1020                 | 239.1.1.217              | 239.1.127.217            | 52104 |            |                          |                          |       |

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|                                        |                                                                                  |   |      |             |               |       |      |             |               |       |
|----------------------------------------|----------------------------------------------------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
| Quote Request Channels                 |                                                                                  | 2 | 2020 | 239.1.1.217 | 239.1.127.217 | 52204 |      |             |               |       |
|                                        |                                                                                  | 3 | 3020 | 239.1.1.217 | 239.1.127.217 | 52304 |      |             |               |       |
|                                        |                                                                                  | 4 | 4020 | 239.1.1.217 | 239.1.127.217 | 52404 |      |             |               |       |
|                                        |                                                                                  | 5 | 5020 | 239.1.1.217 | 239.1.127.217 | 52504 |      |             |               |       |
|                                        |                                                                                  | 6 | 6020 | 239.1.1.217 | 239.1.127.217 | 52604 |      |             |               |       |
| Level 2 Price and COP Channels         | Calculate Opening Price (364)<br>Aggregate OrderBook update (353)<br>Trade (350) | 1 | 1027 | 239.1.1.223 | 239.1.127.223 | 52100 | 1527 | 239.1.1.244 | 239.1.127.244 | 52100 |
|                                        |                                                                                  | 2 | 2027 | 239.1.1.223 | 239.1.127.223 | 52200 | 2527 | 239.1.1.244 | 239.1.127.244 | 52200 |
|                                        |                                                                                  | 3 | 3027 | 239.1.1.223 | 239.1.127.223 | 52300 | 3527 | 239.1.1.244 | 239.1.127.244 | 52300 |
|                                        |                                                                                  | 4 | 4027 | 239.1.1.223 | 239.1.127.223 | 52400 | 4527 | 239.1.1.244 | 239.1.127.244 | 52400 |
|                                        |                                                                                  | 5 | 5027 | 239.1.1.223 | 239.1.127.223 | 52500 | 5527 | 239.1.1.244 | 239.1.127.244 | 52500 |
|                                        |                                                                                  | 6 | 6027 | 239.1.1.223 | 239.1.127.223 | 52600 | 6527 | 239.1.1.244 | 239.1.127.244 | 52600 |
| Trade Statistic Channels               | Trade Statistic (360)                                                            | 1 | 1039 | 239.1.1.223 | 239.1.127.223 | 52101 | 1539 | 239.1.1.244 | 239.1.127.244 | 52101 |
|                                        |                                                                                  | 2 | 2039 | 239.1.1.223 | 239.1.127.223 | 52201 | 2539 | 239.1.1.244 | 239.1.127.244 | 52201 |
|                                        |                                                                                  | 3 | 3039 | 239.1.1.223 | 239.1.127.223 | 52301 | 3539 | 239.1.1.244 | 239.1.127.244 | 52301 |
|                                        |                                                                                  | 4 | 4039 | 239.1.1.223 | 239.1.127.223 | 52401 | 4539 | 239.1.1.244 | 239.1.127.244 | 52401 |
|                                        |                                                                                  | 5 | 5039 | 239.1.1.223 | 239.1.127.223 | 52501 | 5539 | 239.1.1.244 | 239.1.127.244 | 52501 |
|                                        |                                                                                  | 6 | 6039 | 239.1.1.223 | 239.1.127.223 | 52601 | 6539 | 239.1.1.244 | 239.1.127.244 | 52601 |
| Market Alert Channels                  | Market Alert (323)                                                               | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                        |                                                                                  | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                        |                                                                                  | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                        |                                                                                  | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                        |                                                                                  | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                        |                                                                                  | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)                                                            | 1 | 1052 | 239.1.1.235 | 239.1.127.235 | 52100 |      |             |               |       |
|                                        |                                                                                  | 2 | 2052 | 239.1.1.235 | 239.1.127.235 | 52200 |      |             |               |       |
|                                        |                                                                                  | 3 | 3052 | 239.1.1.235 | 239.1.127.235 | 52300 |      |             |               |       |
|                                        |                                                                                  | 4 | 4052 | 239.1.1.235 | 239.1.127.235 | 52400 |      |             |               |       |
|                                        |                                                                                  | 5 | 5052 | 239.1.1.235 | 239.1.127.235 | 52500 |      |             |               |       |
|                                        |                                                                                  | 6 | 6052 | 239.1.1.235 | 239.1.127.235 | 52600 |      |             |               |       |

OMD-D Connectivity Guide

|                                     |                                   |  |      |             |               |       |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|
| Derivatives<br>DR Signal<br>Channel | Disaster Recovery Signal<br>(105) |  | 1088 | 239.1.1.232 | 239.1.127.232 | 52000 |  |  |  |  |
|-------------------------------------|-----------------------------------|--|------|-------------|---------------|-------|--|--|--|--|

2.2.3.8 OMD Derivatives Full Tick (non-SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                                           |             | ODP-TR-Env2 (DF Non SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                                            | Partition # | Channel ID               | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                                                                           |             |                          | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                                       | 1           | 1001                     | 239.1.1.218              | 239.1.127.218            | 52101 | 1501       | 239.1.1.239              | 239.1.127.239            | 52101 |
|                            |                                                                                                                                                                           | 2           | 2001                     | 239.1.1.218              | 239.1.127.218            | 52201 | 2501       | 239.1.1.239              | 239.1.127.239            | 52201 |
|                            |                                                                                                                                                                           | 3           | 3001                     | 239.1.1.218              | 239.1.127.218            | 52301 | 3501       | 239.1.1.239              | 239.1.127.239            | 52301 |
|                            |                                                                                                                                                                           | 4           | 4001                     | 239.1.1.218              | 239.1.127.218            | 52401 | 4501       | 239.1.1.239              | 239.1.127.239            | 52401 |
|                            |                                                                                                                                                                           | 5           | 5001                     | 239.1.1.218              | 239.1.127.218            | 52501 | 5501       | 239.1.1.239              | 239.1.127.239            | 52501 |
|                            |                                                                                                                                                                           | 6           | 6001                     | 239.1.1.218              | 239.1.127.218            | 52601 | 6501       | 239.1.1.239              | 239.1.127.239            | 52601 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                                                | 1           | 1010                     | 239.1.1.218              | 239.1.127.218            | 52102 | 1510       | 239.1.1.239              | 239.1.127.239            | 52102 |
|                            |                                                                                                                                                                           | 2           | 2010                     | 239.1.1.218              | 239.1.127.218            | 52202 | 2510       | 239.1.1.239              | 239.1.127.239            | 52202 |
|                            |                                                                                                                                                                           | 3           | 3010                     | 239.1.1.218              | 239.1.127.218            | 52302 | 3510       | 239.1.1.239              | 239.1.127.239            | 52302 |
|                            |                                                                                                                                                                           | 4           | 4010                     | 239.1.1.218              | 239.1.127.218            | 52402 | 4510       | 239.1.1.239              | 239.1.127.239            | 52402 |
|                            |                                                                                                                                                                           | 5           | 5010                     | 239.1.1.218              | 239.1.127.218            | 52502 | 5510       | 239.1.1.239              | 239.1.127.239            | 52502 |
|                            |                                                                                                                                                                           | 6           | 6010                     | 239.1.1.218              | 239.1.127.218            | 52602 | 6510       | 239.1.1.239              | 239.1.127.239            | 52602 |
| Order & Trade Channels     | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>Calculated Opening Price (364)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>Trade (350) | 1           | 1013                     | 239.1.1.222              | 239.1.127.222            | 52100 | 1513       | 239.1.1.243              | 239.1.127.243            | 52100 |
|                            |                                                                                                                                                                           | 2           | 2013                     | 239.1.1.222              | 239.1.127.222            | 52200 | 2513       | 239.1.1.243              | 239.1.127.243            | 52200 |
|                            |                                                                                                                                                                           | 3           | 3013                     | 239.1.1.222              | 239.1.127.222            | 52300 | 3513       | 239.1.1.243              | 239.1.127.243            | 52300 |
|                            |                                                                                                                                                                           | 4           | 4013                     | 239.1.1.222              | 239.1.127.222            | 52400 | 4513       | 239.1.1.243              | 239.1.127.243            | 52400 |
|                            |                                                                                                                                                                           | 5           | 5013                     | 239.1.1.222              | 239.1.127.222            | 52500 | 5513       | 239.1.1.243              | 239.1.127.243            | 52500 |
|                            |                                                                                                                                                                           | 6           | 6013                     | 239.1.1.222              | 239.1.127.222            | 52600 | 6513       | 239.1.1.243              | 239.1.127.243            | 52600 |
| Quote Request Channels     | Quote Request (336)                                                                                                                                                       | 1           | 1019                     | 239.1.1.218              | 239.1.127.218            | 52104 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 2           | 2019                     | 239.1.1.218              | 239.1.127.218            | 52204 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 3           | 3019                     | 239.1.1.218              | 239.1.127.218            | 52304 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 4           | 4019                     | 239.1.1.218              | 239.1.127.218            | 52404 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 5           | 5019                     | 239.1.1.218              | 239.1.127.218            | 52504 |            |                          |                          |       |

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|                                                                   |                                      |   |      |             |               |       |      |             |               |       |
|-------------------------------------------------------------------|--------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                                   |                                      | 6 | 6019 | 239.1.1.218 | 239.1.127.218 | 52604 |      |             |               |       |
| <b>Market<br/>Alert<br/>Channels</b>                              | Market Alert (323)                   | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                                   |                                      | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                                   |                                      | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                                   |                                      | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                                   |                                      | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                                   |                                      | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Trade<br/>Amendment<br/>&amp; Block<br/>Trade<br/>Channels</b> | Trade Amendment (356)<br>Trade (350) | 1 | 1051 | 239.1.1.236 | 239.1.127.236 | 52100 |      |             |               |       |
|                                                                   |                                      | 2 | 2051 | 239.1.1.236 | 239.1.127.236 | 52200 |      |             |               |       |
|                                                                   |                                      | 3 | 3051 | 239.1.1.236 | 239.1.127.236 | 52300 |      |             |               |       |
|                                                                   |                                      | 4 | 4051 | 239.1.1.236 | 239.1.127.236 | 52400 |      |             |               |       |
|                                                                   |                                      | 5 | 5051 | 239.1.1.236 | 239.1.127.236 | 52500 |      |             |               |       |
|                                                                   |                                      | 6 | 6051 | 239.1.1.236 | 239.1.127.236 | 52600 |      |             |               |       |
| <b>Derivatives<br/>DR Signal<br/>Channel</b>                      | Disaster Recovery Signal<br>(105)    |   | 1088 | 239.1.1.232 | 239.1.127.232 | 52000 |      |             |               |       |

2.2.3.9 OMD Derivatives Full Tick (SOM) (streaming)

| Channel Names and Messages |                                                                                                                                                                           |             | ODP-TR-Env2 (DF SOM) |                          |                          |       |            |                          |                          |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                                                                                                                                                            | Partition # | Channel ID           | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                                                                                                                                                           |             |                      | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Reference Data             | Commodity Definition (301)<br>Class Definition (302)<br>Instrument Definition (303)<br>Combination Definition (305)                                                       | 1           | 1002                 | 239.1.1.217              | 239.1.127.217            | 52101 | 1502       | 239.1.1.238              | 239.1.127.238            | 52101 |
|                            |                                                                                                                                                                           | 2           | 2002                 | 239.1.1.217              | 239.1.127.217            | 52201 | 2502       | 239.1.1.238              | 239.1.127.238            | 52201 |
|                            |                                                                                                                                                                           | 3           | 3002                 | 239.1.1.217              | 239.1.127.217            | 52301 | 3502       | 239.1.1.238              | 239.1.127.238            | 52301 |
|                            |                                                                                                                                                                           | 4           | 4002                 | 239.1.1.217              | 239.1.127.217            | 52401 | 4502       | 239.1.1.238              | 239.1.127.238            | 52401 |
|                            |                                                                                                                                                                           | 5           | 5002                 | 239.1.1.217              | 239.1.127.217            | 52501 | 5502       | 239.1.1.238              | 239.1.127.238            | 52501 |
|                            |                                                                                                                                                                           | 6           | 6002                 | 239.1.1.217              | 239.1.127.217            | 52601 | 6502       | 239.1.1.238              | 239.1.127.238            | 52601 |
| Status and Trigger         | Market Status (320)<br>Instrument Status (321)<br>Commodity & Class Status (322)<br>VCM Trigger (324)<br>THM Trigger (325)                                                | 1           | 1011                 | 239.1.1.217              | 239.1.127.217            | 52102 | 1511       | 239.1.1.238              | 239.1.127.238            | 52102 |
|                            |                                                                                                                                                                           | 2           | 2011                 | 239.1.1.217              | 239.1.127.217            | 52202 | 2511       | 239.1.1.238              | 239.1.127.238            | 52202 |
|                            |                                                                                                                                                                           | 3           | 3011                 | 239.1.1.217              | 239.1.127.217            | 52302 | 3511       | 239.1.1.238              | 239.1.127.238            | 52302 |
|                            |                                                                                                                                                                           | 4           | 4011                 | 239.1.1.217              | 239.1.127.217            | 52402 | 4511       | 239.1.1.238              | 239.1.127.238            | 52402 |
|                            |                                                                                                                                                                           | 5           | 5011                 | 239.1.1.217              | 239.1.127.217            | 52502 | 5511       | 239.1.1.238              | 239.1.127.238            | 52502 |
|                            |                                                                                                                                                                           | 6           | 6011                 | 239.1.1.217              | 239.1.127.217            | 52602 | 6511       | 239.1.1.238              | 239.1.127.238            | 52602 |
| Order & Trade Channels     | Add Order (330)<br>Modify Order (331)<br>Delete Order (332)<br>Calculated Opening Price (364)<br>OrderBook Clear (335)<br>Aggregate Implied Quantity (337)<br>Trade (350) | 1           | 1014                 | 239.1.1.221              | 239.1.127.221            | 52100 | 1514       | 239.1.1.242              | 239.1.127.242            | 52100 |
|                            |                                                                                                                                                                           | 2           | 2014                 | 239.1.1.221              | 239.1.127.221            | 52200 | 2514       | 239.1.1.242              | 239.1.127.242            | 52200 |
|                            |                                                                                                                                                                           | 3           | 3014                 | 239.1.1.221              | 239.1.127.221            | 52300 | 3514       | 239.1.1.242              | 239.1.127.242            | 52300 |
|                            |                                                                                                                                                                           | 4           | 4014                 | 239.1.1.221              | 239.1.127.221            | 52400 | 4514       | 239.1.1.242              | 239.1.127.242            | 52400 |
|                            |                                                                                                                                                                           | 5           | 5014                 | 239.1.1.221              | 239.1.127.221            | 52500 | 5514       | 239.1.1.242              | 239.1.127.242            | 52500 |
|                            |                                                                                                                                                                           | 6           | 6014                 | 239.1.1.221              | 239.1.127.221            | 52600 | 6514       | 239.1.1.242              | 239.1.127.242            | 52600 |
| Quote Request Channels     | Quote Request (336)                                                                                                                                                       | 1           | 1020                 | 239.1.1.217              | 239.1.127.217            | 52104 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 2           | 2020                 | 239.1.1.217              | 239.1.127.217            | 52204 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 3           | 3020                 | 239.1.1.217              | 239.1.127.217            | 52304 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 4           | 4020                 | 239.1.1.217              | 239.1.127.217            | 52404 |            |                          |                          |       |
|                            |                                                                                                                                                                           | 5           | 5020                 | 239.1.1.217              | 239.1.127.217            | 52504 |            |                          |                          |       |

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|                                                                   |                                      |   |      |             |               |       |      |             |               |       |
|-------------------------------------------------------------------|--------------------------------------|---|------|-------------|---------------|-------|------|-------------|---------------|-------|
|                                                                   |                                      | 6 | 6020 | 239.1.1.217 | 239.1.127.217 | 52604 |      |             |               |       |
| <b>Market<br/>Alert<br/>Channels</b>                              | Market Alert (323)                   | 1 | 1049 | 239.1.1.232 | 239.1.127.232 | 52100 | 1549 | 239.1.1.253 | 239.1.127.253 | 52100 |
|                                                                   |                                      | 2 | 2049 | 239.1.1.232 | 239.1.127.232 | 52200 | 2549 | 239.1.1.253 | 239.1.127.253 | 52200 |
|                                                                   |                                      | 3 | 3049 | 239.1.1.232 | 239.1.127.232 | 52300 | 3549 | 239.1.1.253 | 239.1.127.253 | 52300 |
|                                                                   |                                      | 4 | 4049 | 239.1.1.232 | 239.1.127.232 | 52400 | 4549 | 239.1.1.253 | 239.1.127.253 | 52400 |
|                                                                   |                                      | 5 | 5049 | 239.1.1.232 | 239.1.127.232 | 52500 | 5549 | 239.1.1.253 | 239.1.127.253 | 52500 |
|                                                                   |                                      | 6 | 6049 | 239.1.1.232 | 239.1.127.232 | 52600 | 6549 | 239.1.1.253 | 239.1.127.253 | 52600 |
| <b>Trade<br/>Amendment<br/>&amp; Block<br/>Trade<br/>Channels</b> | Trade Amendment (356)<br>Trade (350) | 1 | 1052 | 239.1.1.235 | 239.1.127.235 | 52100 |      |             |               |       |
|                                                                   |                                      | 2 | 2052 | 239.1.1.235 | 239.1.127.235 | 52200 |      |             |               |       |
|                                                                   |                                      | 3 | 3052 | 239.1.1.235 | 239.1.127.235 | 52300 |      |             |               |       |
|                                                                   |                                      | 4 | 4052 | 239.1.1.235 | 239.1.127.235 | 52400 |      |             |               |       |
|                                                                   |                                      | 5 | 5052 | 239.1.1.235 | 239.1.127.235 | 52500 |      |             |               |       |
|                                                                   |                                      | 6 | 6052 | 239.1.1.235 | 239.1.127.235 | 52600 |      |             |               |       |
| <b>Derivatives<br/>DR Signal<br/>Channel</b>                      | Disaster Recovery Signal<br>(105)    |   | 1088 | 239.1.1.197 | 239.1.127.197 | 52000 |      |             |               |       |

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

| Channel Names and Messages             |                                      |             | ODP-TR-Env2 (DT Non SOM) |                          |                          |              |            |                          |                          |
|----------------------------------------|--------------------------------------|-------------|--------------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category             | OMD-D Messages                       | Partition # | Channel ID               | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                                        |                                      |             |                          | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade Channels                         | Trade (350)                          | 1           | 1016                     | 239.1.1.234              | 239.1.127.234            | 52100        |            |                          |                          |
|                                        |                                      | 2           | 2016                     | 239.1.1.234              | 239.1.127.234            | 52200        |            |                          |                          |
|                                        |                                      | 3           | 3016                     | 239.1.1.234              | 239.1.127.234            | 52300        |            |                          |                          |
|                                        |                                      | 4           | 4016                     | 239.1.1.234              | 239.1.127.234            | 52400        |            |                          |                          |
|                                        |                                      | 5           | 5016                     | 239.1.1.234              | 239.1.127.234            | 52500        |            |                          |                          |
|                                        |                                      | 6           | 6016                     | 239.1.1.234              | 239.1.127.234            | 52600        |            |                          |                          |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350) | 1           | 1051                     | 239.1.1.236              | 239.1.127.236            | 52100        |            |                          |                          |
|                                        |                                      | 2           | 2051                     | 239.1.1.236              | 239.1.127.236            | 52200        |            |                          |                          |
|                                        |                                      | 3           | 3051                     | 239.1.1.236              | 239.1.127.236            | 52300        |            |                          |                          |
|                                        |                                      | 4           | 4051                     | 239.1.1.236              | 239.1.127.236            | 52400        |            |                          |                          |
|                                        |                                      | 5           | 5051                     | 239.1.1.236              | 239.1.127.236            | 52500        |            |                          |                          |
|                                        |                                      | 6           | 6051                     | 239.1.1.236              | 239.1.127.236            | 52600        |            |                          |                          |



2.2.3.11 OMD Derivatives Trade (SOM) (streaming)

| Channel Names and Messages             |                                      |             | ODP-TR-Env2 (DT SOM) |                          |                          |              |            |                          |                          |
|----------------------------------------|--------------------------------------|-------------|----------------------|--------------------------|--------------------------|--------------|------------|--------------------------|--------------------------|
| Multicast Channel Category             | OMD-D Messages                       | Partition # | Channel ID           | Real Time Channels       |                          | Common Ports | Channel ID | Refresh Channels         |                          |
|                                        |                                      |             |                      | Line A Multicast Address | Line B Multicast Address |              |            | Line A Multicast Address | Line B Multicast Address |
| Trade Channels                         | Trade (350)                          | 1           | 1017                 | 239.1.1.233              | 239.1.127.233            | 52100        |            |                          |                          |
|                                        |                                      | 2           | 2017                 | 239.1.1.233              | 239.1.127.233            | 52200        |            |                          |                          |
|                                        |                                      | 3           | 3017                 | 239.1.1.233              | 239.1.127.233            | 52300        |            |                          |                          |
|                                        |                                      | 4           | 4017                 | 239.1.1.233              | 239.1.127.233            | 52400        |            |                          |                          |
|                                        |                                      | 5           | 5017                 | 239.1.1.233              | 239.1.127.233            | 52500        |            |                          |                          |
|                                        |                                      | 6           | 6017                 | 239.1.1.233              | 239.1.127.233            | 52600        |            |                          |                          |
| Trade Amendment & Block Trade Channels | Trade Amendment (356)<br>Trade (350) | 1           | 1052                 | 239.1.1.235              | 239.1.127.235            | 52100        |            |                          |                          |
|                                        |                                      | 2           | 2052                 | 239.1.1.235              | 239.1.127.235            | 52200        |            |                          |                          |
|                                        |                                      | 3           | 3052                 | 239.1.1.235              | 239.1.127.235            | 52300        |            |                          |                          |
|                                        |                                      | 4           | 4052                 | 239.1.1.235              | 239.1.127.235            | 52400        |            |                          |                          |
|                                        |                                      | 5           | 5052                 | 239.1.1.235              | 239.1.127.235            | 52500        |            |                          |                          |
|                                        |                                      | 6           | 6052                 | 239.1.1.235              | 239.1.127.235            | 52600        |            |                          |                          |

2.2.3.12 OMD Index (streaming)

| Channel Names and Messages |                                          |             | ODP-TR-Env2 (Index) |                          |                          |       |            |                          |                          |       |
|----------------------------|------------------------------------------|-------------|---------------------|--------------------------|--------------------------|-------|------------|--------------------------|--------------------------|-------|
| Multicast Channel Category | OMD-D Messages                           | Partition # | Channel ID          | Real Time Channels       |                          | Ports | Channel ID | Refresh Channels         |                          | Ports |
|                            |                                          |             |                     | Line A Multicast Address | Line B Multicast Address |       |            | Line A Multicast Address | Line B Multicast Address |       |
| Index                      | Index Definition (70)<br>Index Data (71) | HKEX        | 40                  | 239.1.1.87               | 239.1.127.87             | 53551 | 541        | 239.1.1.87               | 239.1.127.87             | 63551 |
|                            |                                          | HSI         | 41                  | 239.1.1.85               | 239.1.127.85             | 53550 | 542        | 239.1.1.85               | 239.1.127.85             | 63550 |
|                            |                                          | CSI         | 42                  | 239.1.1.86               | 239.1.127.86             | 53550 | 543        | 239.1.1.86               | 239.1.127.86             | 63550 |
| Index DR Signal            | Disaster Recovery Signal (105)           | -           | 49                  | 239.1.1.87               | 239.1.127.87             | 53558 |            |                          |                          |       |

### 2.2.3.13 HKEX OMD Retransmission Unicast Connectivity (For All Non-Index Channels)

A Retransmission Service is provided to recover multicast packet loss in all Non-Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **ODP-TR-Env2**.

| Retransmission Server          | IP Unicast Address |
|--------------------------------|--------------------|
| Primary server in primary site | 10.170.3.161:55455 |

### 2.2.3.14 HKEX OMD Index Retransmission Unicast Connectivity (For All Index Channels)

A Retransmission Service for Index is provided to recover multicast packet loss in all Index Channels. Functional details of the Retransmission Service are provided in the Interface Specification. Find below the Unicast Addresses to connect to the OMD Retransmission Servers in **OMD-Index Testing Environment**.

| Retransmission Server          | IP Unicast Address |
|--------------------------------|--------------------|
| Primary server in primary site | 10.170.3.37:55455  |

### 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

Full suite of OMD datafeed products for Derivatives Market data and respective estimated bandwidth requirements are as follows.

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

##### *Minimum Bandwidth Allocation Between Multicast and Unicast in Each Datafeed*

| Datafeed                                                     | Minimum Multicast Allocation<br>(i.e. Real Time & Refresh) with /<br>without the Index Feed (INDEX) <sup>1</sup> | Minimum Unicast Allocation <sup>2</sup><br>(i.e. Retransmission) |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Derivatives Lite (D-Lite) – Non-SOM</b>                   | 5.5 Mbps                                                                                                         | 0.5 Mbps                                                         |
| <b>D-Lite – Non-SOM + Derivatives Trade (DT)<sup>3</sup></b> | 7.5 Mbps                                                                                                         | 0.5 Mbps                                                         |
| <b>D-Lite – SOM</b>                                          | 7.5 Mbps                                                                                                         | 0.5 Mbps                                                         |
| <b>D-Lite – SOM + DT</b>                                     | 9.5 Mbps                                                                                                         | 0.5 Mbps                                                         |
| <b>D-Lite – Order Feed</b>                                   | 3 Mbps                                                                                                           | Not applicable                                                   |
| <b>Derivatives Standard (DS) – Non-SOM</b>                   | 13 Mbps                                                                                                          | 1 Mbps                                                           |
| <b>DS – Non-SOM + DT</b>                                     | 15 Mbps                                                                                                          | 1 Mbps                                                           |
| <b>DS – SOM</b>                                              | 13 Mbps                                                                                                          | 1 Mbps                                                           |
| <b>DS – SOM + DT</b>                                         | 15 Mbps                                                                                                          | 1 Mbps                                                           |
| <b>Derivatives Premium (DP) – Non-SOM<sup>4</sup></b>        | 49 Mbps                                                                                                          | 1 Mbps                                                           |
| <b>DP – SOM<sup>4</sup></b>                                  | 129 Mbps                                                                                                         | 1 Mbps                                                           |

<sup>1</sup> Update rate of individual index depends on respective index providers

<sup>2</sup> If more than 1 datafeed are subscribed in Production or Readiness Test Environment, the minimum bandwidth for unicast is 1 Mbps (0.5Mbps for D-Lite only)

<sup>3</sup> DT is only applicable to D-Lite and DS subscribers

<sup>4</sup> DP and DF Clients have to subscribe to lines with High Performance Option (HPO) to avoid potential data loss in the event of bursty traffic that could happen in the production environment.

|                                                         |          |        |
|---------------------------------------------------------|----------|--------|
| <b>Derivatives Full Tick (DF) – Non-SOM<sup>4</sup></b> | 49 Mbps  | 1 Mbps |
| <b>DF – SOM<sup>4</sup></b>                             | 129 Mbps | 1 Mbps |

### 3.2.2 Testing SDNet/2 / HSN for other Testing Environment

#### Minimum Bandwidth Allocation Between Multicast and Unicast in Each Datafeed

| <b>Datafeed</b>            | <b>Minimum Multicast Allocation</b><br>(i.e. Real Time & Refresh) with<br>Any Combination / All of the<br>following Complimentary<br>Datafeed(s)<br>a) INDEX<br>b) DT | <b>Minimum Unicast Allocation<sup>1</sup></b><br>(i.e. Retransmission) |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>D-Lite – Non-SOM</b>    | 1 Mbps                                                                                                                                                                | 0.5 Mbps                                                               |
| <b>D-Lite – SOM</b>        | 2.5 Mbps                                                                                                                                                              | 0.5 Mbps                                                               |
| <b>D-Lite – Order Feed</b> | 3 Mbps                                                                                                                                                                | Not applicable                                                         |
| <b>DS – Non-SOM</b>        | 1 Mbps                                                                                                                                                                | 0.5 Mbps                                                               |
| <b>DS – SOM</b>            | 4.5 Mbps                                                                                                                                                              | 0.5 Mbps                                                               |
| <b>DP – Non-SOM</b>        | 1.5 Mbps                                                                                                                                                              | 0.5 Mbps                                                               |
| <b>DP – SOM</b>            | 6.5 Mbps                                                                                                                                                              | 0.5 Mbps                                                               |
| <b>DF – Non-SOM</b>        | 1 Mbps                                                                                                                                                                | 0.5 Mbps                                                               |
| <b>DF – SOM</b>            | 3.5 Mbps                                                                                                                                                              | 0.5 Mbps                                                               |

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### 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 systems, e.g. derivatives trading system, 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. derivatives trading system, 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. derivatives trading system.

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). OMD-Index, which is market neutral, can be carried on the same circuits with securities market or derivatives market. For example, Exchange Participants of derivatives market may use the same SDNet/2 circuits for their access to DS, OMD-Index and derivatives trading system.
- 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.

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### 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 1: Sharing of a set of SDNet/2 lines for DS (SOM + Non-SOM) and DF (SOM) in Production Environment:

The minimum bandwidth requirements for multicast of DS (Non-SOM), DS (SOM) and DF (SOM) are 13 Mbps, 13 Mbps and 129 Mbps respectively while the minimum bandwidth requirement for unicast of multiple datafeeds is 1 Mbps, a set of SDNet/2 lines with 1 Gbps will be required. (Actual bandwidth requirement is 156 Mbps and minimum incremental bandwidth threshold over 100Mbps for SDNet/2 lines is 1Gbps)

Example 2: Sharing of a set of SDNet/2 lines for DS (SOM + Non-SOM) and OMD D-Lite (SOM + Non-SOM) + D-Lite Order feed in Production Environment:

The minimum bandwidth requirements for multicast of DS (SOM + Non-SOM) and D-Lite (SOM + Non-SOM) are 26 Mbps and 16 Mbps respectively while the , minimum bandwidth requirement for unicast of multiple datafeeds is 1 Mbps, a set of SDNet/2 lines with 50 Mbps will be required. (Actual bandwidth requirement is 43 Mbps and minimum incremental bandwidth threshold is 10 Mbps for SDNet/2 lines of 10 Mbps-100 Mbps)

Example 3: Sharing of a set of SDNet/2 lines for DF (SOM + Non-SOM) and SS in OMD-C<sup>1</sup> in Production Environment:

The minimum bandwidth requirements for multicast of DF (SOM + Non-SOM) and SS in OMD-C are 178 Mbps and 15 Mbps respectively. Whereas the minimum bandwidth requirement for unicast of multiple datafeeds of OMD-D and SS in OMD-C are 1Mbps and 0.2 Mbps respectively. Therefore, a common set of SDNet/2 lines with 1 Gbps will be required.

(Actual bandwidth requirement is 194.2 Mbps and minimum incremental bandwidth threshold over 100Mbps for SDNet/2 lines is 1Gbps)

- 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.

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### 3.5 SDNet/2 High Performance Option

Clients who are required to install circuits with a bandwidth of 30 Mbps or above for connecting to HKEX systems have to subscribe to lines with High Performance Option (HPO) to avoid potential data loss in the event of bursty traffic that could happen in the production environment.

High Performance Option of SDNet/2 which transmits data in relatively high packet rates is required for clients who subscribe to OMD streaming feeds, i.e. DP and DF. OMD DS provides conflated price level information, and the message rate sent for the conflation period is relatively not high, so HPO is not necessary.

Please refer to Appendix A for details on high performance options provided by different SDNet/2 providers.

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<sup>1</sup> For OMD-C connectivity information, please refer to the Connectivity Guide for OMD Securities Market and Index Datafeed Products (OMD-C).

## 4. Other Guidelines on OMD Connections

### 4.1 Additional Login IDs/Client IP addresses for Unicast Retransmission Service

Direct connection clients will get one set of login ID with two IP addresses for retransmission service per OMD-D datafeed subscription. That means, clients subscribing to one set of DP feed and one set of DF feed will get two login IDs each with two IP addresses. These login IDs would be generic ID where each ID can be used to recover either the DP and DF missing data rather than tied to the respective datafeed product associated with that login ID provided that the same pair of SDNet/2 or HSN circuits is used for receiving the data from both DP and DF.

Exchange Participants who are entitled to receive two sets of complimentary DS feed via two different pairs of circuits when migrating to derivatives trading system would also be entitled to one complimentary login ID per set of DS feed which is also a generic ID.

To facilitate different clients' internal setup or operational requirement, an additional set of login ID and with/without IP addresses for retransmission service can be offered to clients at a cost on a per request basis.

### 4.2 Installation of SDNet/2 and HSN lines

#### 4.2.1 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.

#### 4.2.2 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 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.

Two 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)
- HKBN Enterprise Solutions HK Limited (HKBNES)

For details of SDNet/2 circuit price information / technical specification / service level, please refer to [Price Information / Technical Specification / Service Level of SDNet/2](#) posted on HKEX website.



## Appendix B Sample Client Configuration Information

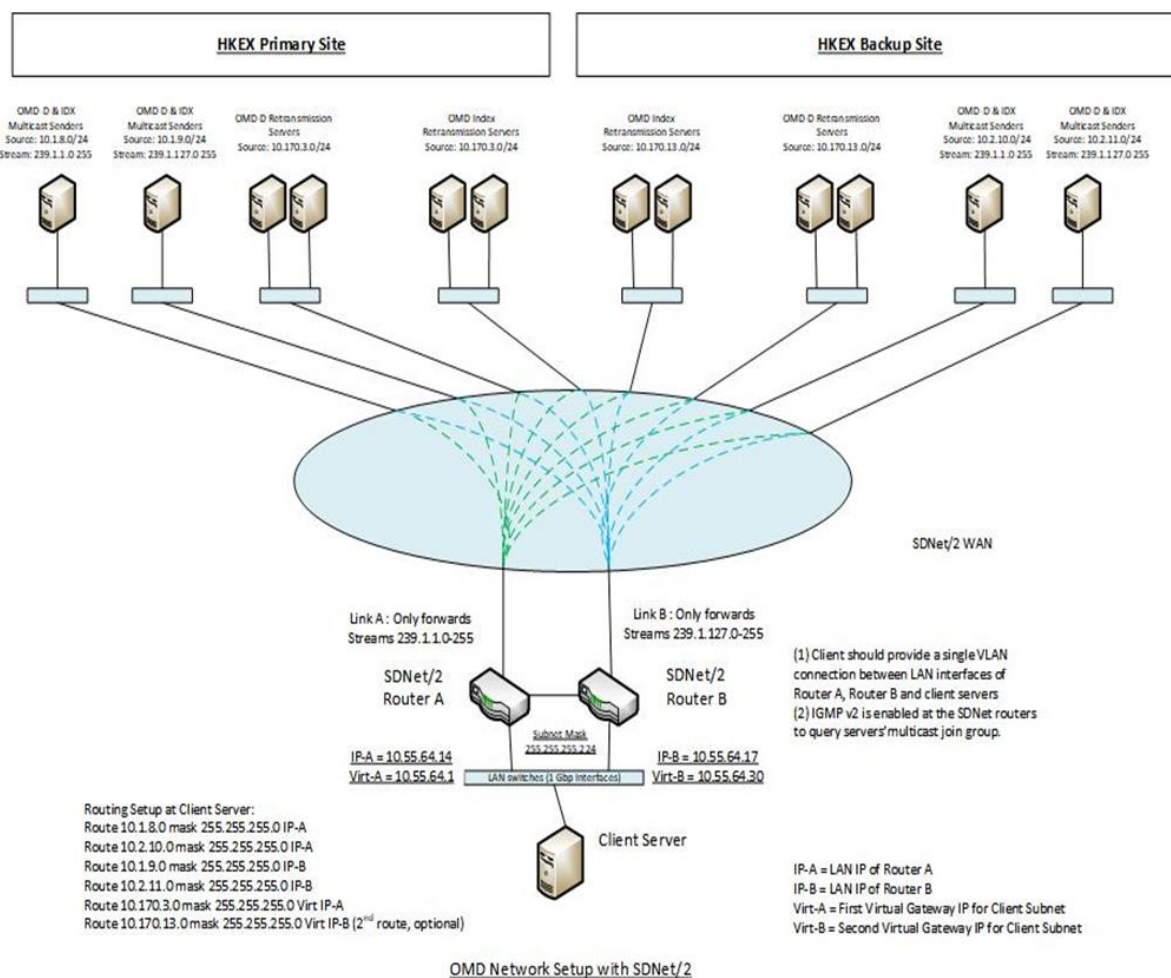
### Client End Network Information (Sample):

|    |                                                                                                             |                                                                     |
|----|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1  | Network                                                                                                     | SDNet/2                                                             |
| 2  | Client Name                                                                                                 | CLIENT1                                                             |
| 3  | OMDD LAN Subnet                                                                                             | 10.55.64.0                                                          |
| 4  | OMDD LAN Subnet Mask                                                                                        | 255.255.255.224                                                     |
| 5  | Client Allowable IP Address 1 for retransmission                                                            | 10.55.64.2                                                          |
| 6  | Client Allowable IP Address 2 for retransmission                                                            | 10.55.64.29                                                         |
| 7  | Primary Circuit Number                                                                                      | 808311                                                              |
| 8  | Subscriber Router A LAN IP Address (IP-A)                                                                   | 10.55.64.14                                                         |
| 9  | Secondary Circuit Number                                                                                    | 808312                                                              |
| 10 | Subscriber Router B LAN IP Address (IP-B)                                                                   | 10.55.64.17                                                         |
| 11 | Subscriber OMDD LAN 1 <sup>st</sup> Virtual Gateway IP Address (Virt-A)                                     | 10.55.64.1                                                          |
| 12 | HSRP Group Number used by SDNet/2 Router for Virt-A                                                         | 14                                                                  |
| 13 | Subscriber OMDD LAN 2 <sup>nd</sup> Virtual Gateway IP Address (Virt-B)                                     | 10.55.64.30                                                         |
| 14 | HSRP Group Number used by SDNet/2 Router for Virt-B                                                         | 17                                                                  |
| 15 | Multicast Protocol used by SDNet/2 Routers                                                                  | IGMPv2                                                              |
| 16 | SDNet/2 Router Physical Interface for OMDD                                                                  | Please refer to the port assignment provided by the network carrier |
| 17 | SDNet/2 Router Port Speed for OMDD                                                                          | Auto Sense up to 1Gbps                                              |
| 18 | SDNet/2 Router Port Duplex Mode for OMDD                                                                    | Auto Negotiation                                                    |
| 19 | IP address ranges usable by Clients for Multicast transmission (IP addresses outside these ranges reserved) | 10.55.64.2,<br>10.55.64.9-13<br>10.55.64.29,<br>10.55.64.18-22      |
|    | Note: Clients can use same set of addresses for Unicast retransmission for the multicast transmission)      |                                                                     |

### Host End Network Information-(non-IDX and IDX source) (Sample):

|    |                                                                                                      |                                                                         |
|----|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1  | Multicast Source Segment of Stream A in Primary Site forwarded by Client SDNet/2 Router A            | 10.1.8.0/24                                                             |
| 2  | Multicast Source Segment of Stream A in Backup Site forwarded by Client SDNet/2 Router A             | 10.2.10.0/24                                                            |
| 3  | Multicast Source Segment for multicast stream B in Primary Site forwarded by Client SDNet/2 Router B | 10.1.9.0/24                                                             |
| 4  | Multicast Source Segment for multicast stream B in Backup Site forwarded by Client SDNet/2 Router B  | 10.2.11.0/24                                                            |
| 5  | Primary Site Primary Retransmission Server IP Address                                                | Please refer to the latest OMD-D Connectivity Guide for the information |
| 6  | Primary Site Primary Retransmission Server TCP Port Number                                           |                                                                         |
| 7  | Primary Site Secondary Retransmission Server IP Address                                              |                                                                         |
| 8  | Primary Site Secondary Retransmission Server TCP Port Number                                         |                                                                         |
| 9  | Backup Site Primary Retransmission Server IP Address                                                 |                                                                         |
| 10 | Backup Site Primary Retransmission Server TCP Port Number                                            |                                                                         |
| 11 | Backup Site Secondary Retransmission Server IP Address                                               |                                                                         |
| 12 | Backup Site Secondary Retransmission Server TCP Port Number                                          |                                                                         |

## OMD-D Connectivity Guide



## DOCUMENT HISTORY

| Document Version | Date        | Change Description                                                                                                                                                                                                                                                                          |
|------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V1.0             | 2 Aug 2013  | First Distribution Issue under the Derivatives Trading system, HKATS                                                                                                                                                                                                                        |
| V2.0             | 11 Feb 2026 | First Version under Orion Derivatives Platform (ODP)                                                                                                                                                                                                                                        |
| V2.1             | 20 Apr 2026 | Remove “Market & Instrument Status” multicast channels and bundled into “Status and Trigger” multicast channels                                                                                                                                                                             |
| V2.2             | 10 Aug 2026 | <p>Add a compression indicator on DS and D-Lite (SOM and Non SOM) “Level 2 Price and COP” multicast channels in production environment</p> <p>Update the connectivity details of Index channels in production environment</p> <p>Update the connectivity details in testing environment</p> |