



CONNECTIVITY GUIDE

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

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DOCUMENT HISTORY

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		1 February 2018	<ul style="list-style-type: none"> Section 2.2 – Add a new subsection for connectivity details for HAKTS Testing Environment
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Contents

1.	Overview	2
2.	Configuration Information	3
2.1	OMD-D Production Environment Connectivity Details	5
2.1.1	OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated).....	5
2.1.2	OMD Derivatives Lite (SOM) – Price Depth Feed (conflated).....	7
2.1.3	OMD Derivatives Lite – Order Feed (snapshot).....	8
2.1.4	OMD Derivatives Trade (Non-SOM) (streaming).....	8
2.1.5	OMD Derivatives Trade (SOM) (streaming).....	8
	HKEX OMD Retransmission Unicast Connectivity.....	9
2.2	OMD-D Test Environment Connectivity Details	10
2.2.1	OMD-D Readiness Test Environment.....	11
2.2.1.1	OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)	11
2.2.1.2	OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)	12
2.2.1.3	OMD Derivatives Lite – Order Feed (snapshot)	13
2.2.1.4	OMD Derivatives Trade (non-SOM) (streaming)	13
2.2.1.5	OMD Derivatives Trade (SOM) (streaming)	14
2.2.1.6	HKEX OMD Retransmission Unicast Connectivity	14
2.2.2	HKATS Testing Environment (Current Production Version)	15
2.2.2.1	OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)	15
2.2.2.2	OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)	16
2.2.2.3	OMD Derivatives Lite – Order Feed (snapshot)	17
2.2.2.4	OMD Derivatives Trade (non-SOM) (streaming)	17
2.2.2.5	OMD Derivatives Trade (SOM) (streaming)	18
2.2.2.6	HKEX OMD Retransmission Unicast Connectivity	18
2.2.3	HKATS Testing Environment (Changes to OMD-D for HKATS/DCASS Upgrade Version).....	19
2.2.3.1	OMD Derivatives Lite (non-SOM) – Price Depth Feed (conflated)	19
2.2.3.2	OMD Derivatives Lite (SOM) – Price Depth Feed (conflated)	20
2.2.3.3	OMD Derivatives Lite – Order Feed (snapshot)	21
2.2.3.4	OMD Derivatives Trade (non-SOM) (streaming)	21
2.2.3.5	OMD Derivatives Trade (SOM) (streaming)	22
2.2.3.6	HKEX OMD Retransmission Unicast Connectivity	22
2.3	Individual Client Configuration Details	22
3.	Guidelines on SDNet/2 lines / HSN connection	23
3.1	Mode of OMD connection	23
3.2	Bandwidth Requirement.....	23
3.2.1	Production SDNet/2 / HSN and Testing SDNet/2 / HSN for OMD-D Readiness Test.....	23
3.2.2	Testing SDNet/2 / HSN for OMD-D and HKATS Testing Environment.....	23
3.3	Sharing of SDNet/2 lines or HSN port set	24
3.4	Bandwidth for shared SDNet/2 lines or HSN port set.....	24
4.	Other Guidelines on OMD Connections	26
4.1	Installation of SDNet/2 and HSN lines	26
4.1.1	SDNet/2 lines.....	26
4.1.2	HSN lines.....	26
	Appendix A – SDNet/2 Accredited Vendors Information	27
	Appendix B Sample Client Configuration Information	28

1. Overview

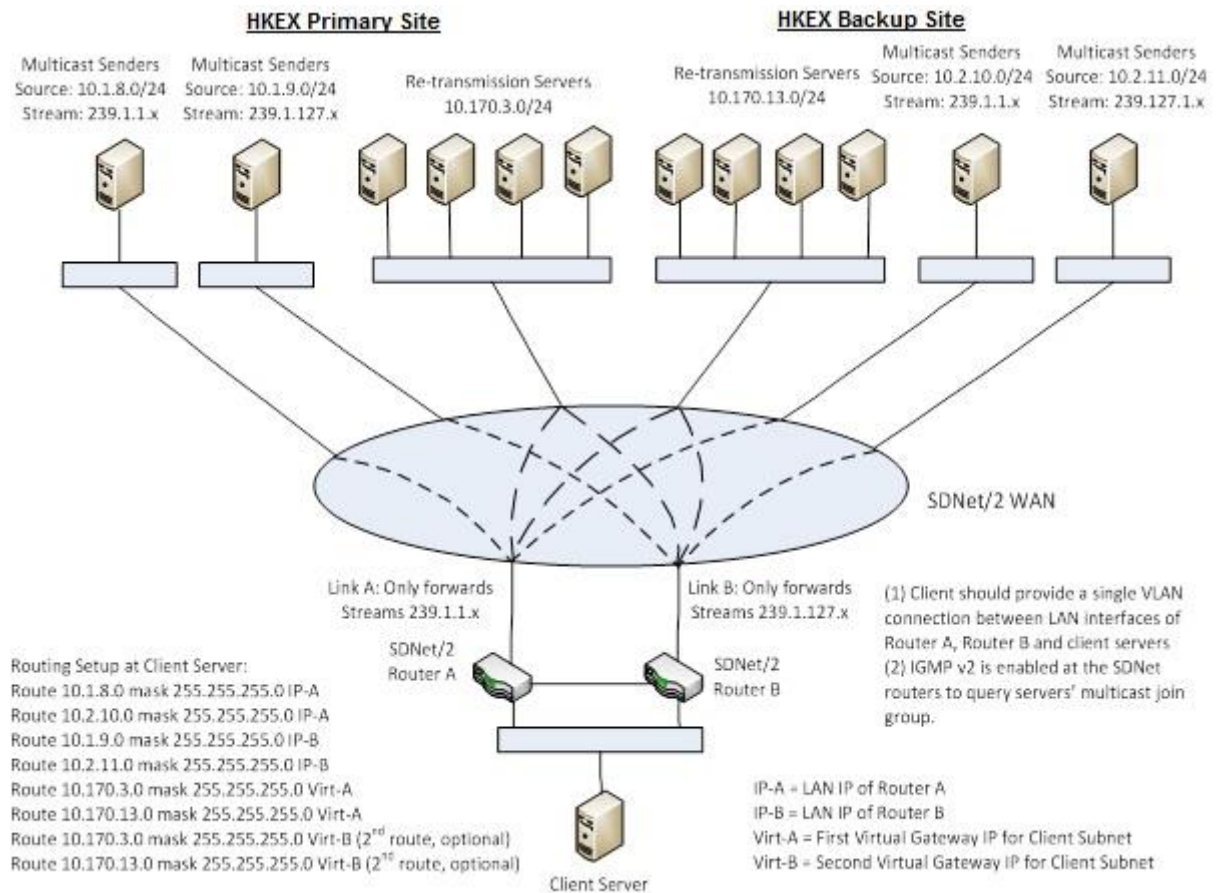
This document aims to provide network configuration information and guidance to assist information vendors and end-users (“clients”) in setting up their networks for making connection to OMD-D testing and production environments.

This document contains:

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

2. Configuration Information

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



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

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

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

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

2.1 OMD-D Production Environment Connectivity Details

Note 1:

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

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

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

Note 2:

The below glossary applies to the following sections

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

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

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

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

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

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

Derivatives DR Signal Channel	Disaster Recovery Signal (105)	178	A: 239.1.1.144:51006 B: 239.1.127.144:51006
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2.1.3 OMD Derivatives Lite – Order Feed (snapshot)

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

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

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

2.1.5 OMD Derivatives Trade (SOM) (streaming)

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

HKEX OMD Retransmission Unicast Connectivity

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

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

2.2 OMD-D Test Environment Connectivity Details

There are two OMD-D Test Environments available:

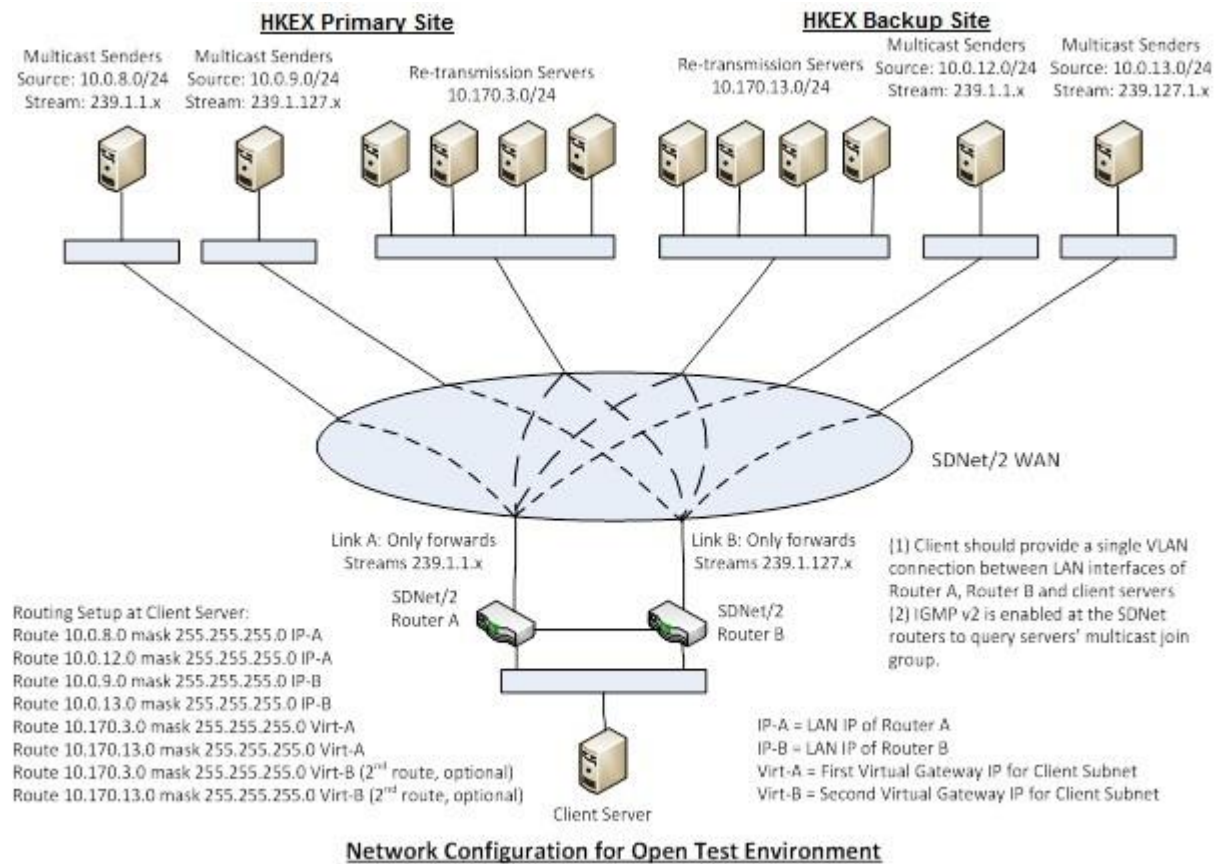
1. OMD-D Readiness Test Environment (“OMD-D RT Environment”)

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

2. HKATS Testing Environment

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

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



2.2.1 OMD-D Readiness Test Environment

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

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

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

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

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

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

2.2.1.3 OMD Derivatives Lite – Order Feed (snapshot)

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

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

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

2.2.1.5 OMD Derivatives Trade (SOM) (streaming)

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

2.2.1.6 HKEX OMD Retransmission Unicast Connectivity

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

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

2.2.2 HKATS Testing Environment (Current Production Version)

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

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

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

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

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

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

2.2.2.3 OMD Derivatives Lite – Order Feed (snapshot)

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

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

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

2.2.2.5 OMD Derivatives Trade (SOM) (streaming)

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

2.2.2.6 HKEX OMD Retransmission Unicast Connectivity

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

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

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

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

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

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

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

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

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

2.2.3.3 OMD Derivatives Lite – Order Feed (snapshot)

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

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

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

2.2.3.5 OMD Derivatives Trade (SOM) (streaming)

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

2.2.3.6 HKEX OMD Retransmission Unicast Connectivity

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

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

2.3 Individual Client Configuration Details

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

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

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

3. Guidelines on SDNet/2 lines / HSN connection

3.1 Mode of OMD connection

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

3.2 Bandwidth Requirement

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

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

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

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

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

3.3 Sharing of SDNet/2 lines or HSN port set

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

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

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

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

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

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

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

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

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

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

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

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

4. Other Guidelines on OMD Connections

4.1 Installation of SDNet/2 and HSN lines

4.1.1 *SDNet/2 lines*

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

4.1.2 *HSN lines*

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

Appendix A – SDNet/2 Accredited Vendors Information

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

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

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

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

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

Appendix B Sample Client Configuration Information

Client End Network Information (Sample):

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

Host End Network Information (Sample):

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

