Information Pack on
On-boarding Activities of
OMD Securities Market & Index

31 July 2012

Contents

1. Introduction

Subsequent to the issuance of information paper and the interface specifications for OMD Securities Market Data as well as our notice on removal of FIX/FAST protocol in OMD, this information pack for the on-boarding activities of OMD Securities Market & Index is now published to assist clients to get familiar with the arrangements and activities required to prepare for the rollout of OMD Securities Market & Index Datafeed Products.

This document aims at providing direct connection clients (including Licensed Vendors and End Users) and indirect connection clients (Licensed Vendors), the detailed arrangement of the on-boarding activities of OMD Securities Market & Index Datafeed Products as follows:

Datafeed Product	Content	Complimentary Service Feed(s)
Securities Market		
1. OMD Securities Standard ("SS")	• Bid/Ask prices, Nominal/ Last trade prices • all trade tickers (timestamp: HH:MM:SS) • Level 2 (10 market depths) • Broker Queues	• Odd Lot Order – Odd lot market by order information
2. OMD Securities Premium ("SP")	• Bid/Ask prices, Nominal/ Last trade prices, • All individual trades (timestamp: HH:MM:SS) • Level 2 (10 market depths)	• Odd Lot Order – Odd lot market by order information • Conflated Broker Queue
3. OMD Securities FullTick ("SF")	• Market by order information (price, quantity & type of each order) • All individual trades (timestamp: HH:MM:SS) • Auction session: no order information but with IEP & IEV	• Odd Lot Order – Odd lot market by order information
Index Data		
1. Index Feed	S&P/HKEx indices and selected indexes from CSIC and HSIL	-

Note 1: The complimentary service feeds will be provided complimentary as per table above but not allowed for standalone subscription.
Note 2: Index Feed should always be coupled with the subscription of any OMD Securities Feed. Please refer to the prevailing fees for Index Feed as stipulated in OMD Fees Schedule.

2. Feed Enrolment

2.1 OMD Feed Enrolment

2.1.1 OMD will provide new and diversified market datafeed products, with different content, depth and bandwidth requirements tailored to suit the need of different market participants. Clients should assess which OMD datafeed(s) best suit their business needs and confirm the feed enrollment accordingly.

2.1.2 Feed-providing vendors are strongly advised to communicate with their indirect connection clients about their preferred OMD datafeed products. Indirect connection clients should also proactively check with their feed providers about which OMD datafeed products they will be providing for their business planning.

2.1.3 Existing clients with either MDF* or MDF 3.8 subscription are required to pay attention to the decommissioning plan of the legacy feeds for their planning on OMD securities datafeed subscription and service migration.

   i.   MDF* will be retired upon the lapse of the 2-week stabilisation period of the OMD rollout. No service extension on MDF* can be accommodated.

   ii. MDF 3.8 will be phased out by 6 months after the rollout of OMD securities market datafeeds.

   Direct connection clients should have their contingency plan of switching to other production source like indirect connection via feed-providing vendors in case they are not able to switch successfully to OMD direct connection by the above timeframe.

2.1.4 In case existing direct connection clients wish to switch to receive OMD market data by indirect connection via feed-providing vendors, instead of direct connection, application for switching to indirect connection license from HKEx-IS is required.

2.2. Batch Enrolment

2.2.1 OMD will be rolled out tentatively by May 2013. Subsequent to the first batch rollout, 2 more batches of OMD production releases are tentatively scheduled as follows. Clients should review their readiness and schedule for their migration to OMD securities datafeeds.

   2.2.1.1   Second Batch : By 3 months after the initial rollout
                            (Tentatively August 2013)
   2.2.1.2   Third Batch   : By 3 months after the second batch
                            (Tentatively November 2013)

2.2.2 For our planning on rollout resources support, clients are invited to confirm their enrollment on (1) the OMD securities market datafeed product(s) and (2) the batch that they would join for releasing to OMD production by returning the OMD Feed Enrolment Form (enclosure 1) via email to OrionMarketData@hkex.com.hk **on or before 31 Aug 2012**. Clients should observe the fees and charges applicable for their subscription as indicated in paragraph 3 below.

2.3. License Updates for OMD Subscription

Schedule 3 and Schedule 4 of the Market Data Vendor Licence Agreement and Market Data End-User Licence Agreement will be updated upon client's successful completion of the Post-Release Test for entering into the OMD production environment and migration of their services to OMD.

3. Fees & Charges

3.1 <u>Fees Schedule</u>: Different fees will be applied to different OMD datafeed products. OMD Fees Schedule has been announced and clients may refer to the Fees Schedule section in the OMD project corner of HKEx website (www.hkex.com.hk/marketdata/).

3.2 <u>Parallel Run</u>: A grace period will be granted to the existing clients who would like have a parallel run of both OMD and MDF 3.8 to smooth their service migration. During the grace period, Redistribution Fee and Connection Fee of MDF 3.8 will be waived. Clients who choose to retain both OMD and MDF 3.8 beyond the grace period will be liable to pay the Redistribution Fee and Connection Fees where applicable for both feeds. Duration of grace period granted for the parallel run of each batch is listed below:

- First Batch with OMD initial rollout   : first 3 months

- Second Batch (3 months after initial rollout) : first 2 months

- Third Batch (3 months after the second batch) : 2-week stabilisation period

4. OMD Network & Connections Issues
(for direct connection clients)

4.1 With the OMD multicast transmission, clients are required to receive live data concurrently via Line A and Line B for line arbitration to avoid data loss. Each set of standard connections comprises two SDNet lines with both concurrently receiving OMD multicast transmission. The two lines of the same set should be provided by the same network service provider ("Accredited Vendor").

4.2 Should clients wish to receive an additional set of connections, they need to install additional two SDNet lines.

4.3 Direct connection clients should contact their SDNet/2 service provider directly to install the SDNet/2 circuits with sufficient bandwidth for supporting the data transmission under OMD.

4.4 The minimum bandwidth requirement for the corresponding OMD Securities & Index datafeed product is preliminarily estimated as follows. It is subject to final confirmation by September 2012.

Datafeed Product		Update Rate	Estimated Bandwidth		Estimated Total
			Mandatory	**Complimentary**	
1.	**Securities** *Standard* **("SS")**	Conflated at 2,000 messages per second	**10Mbps** ● Real-time: 7Mbps ● Refresh: 3Mbps	Order Lot Orders: **50Kbps**	**10Mbps**
2.	**Securities** *Premium*	Streaming	**50Mbps** ● Real-time: 41Mbps	Order Lot Orders: **50Kbps**	**60Mbps**

	("SP")		● Refresh: 9Mbps	Conflated Broker Queue: **6Mbps**	
3.	Securities *FullTick* ("SF")	Streaming	**20Mbps** ● Real-time: 10Mbps ● Refresh: 10Mbps	Order Lot Orders: **50Kbps**	**20Mbps**
4.	Index Feed*	Streaming subject to the source	**1Mbps**	-	**1Mbps**

*Remarks: *Clients who would subscribe to Index Feed in addition to i SS, SP or SF could determine if they would subscribe SDNet lines with an upper bandwidth range provided by the Accredited Vendors.*

4.5 Clients who consider subscribing more than one OMD datafeed products may share the same set of SDNet/2 circuits with multiple OMD datafeeds as long as the total bandwidth required for all subscribed feeds are accommodated.

4.6 Clients are required to note that High Performance Option on SDNet/2 is essential for supporting the OMD datafeed product with higher throughput on streaming feeds. Clients should discuss with their network providers on their corresponding service provision if they choose to subscribe to OMD streaming feeds. The SDNet/2 Accredited Vendors Information with their indicative charges for different bandwidth is enclosed in Enclosure 2 for your reference.

5. Client Interface Development
(for direct connection clients)

5.1 Clients are required to read through the Interface Specification and start development of their interface programme with OMD as early as possible. They are also advised to make reference to the following documents:

- OMD Developers Guide
- OMD Connectivity Guide

6. Testing Plan and Testing Arrangements

6.1 <u>On-boarding tools with canned data</u>
(for direct connection clients only)

OMD on-boarding tools are provided to direct connection clients in order to facilitate the development, enhancement and testing of the client's systems which receive and process data from OMD. A DVD containing the on-boarding tool user guide and the following components of on-boarding tools will be distributed to direct connection clients

Component	Description
RTS Simulator	Facilitates testing of client's software on OMD retransmission services
Multicast (MC) Injector	Broadcasts OMD canned data via multicast over the network

Canned Data	Separate files with fictitious trading data for different testing purpose (volume test or functional test)
XDP Dump	Decodes data into a readable ASCII format

Note: Refresh service is not included in the On-boarding tools, clients should expect the test on their systems' capability in handling refresh messages to be available in OMD End-to-end Open Test and verified in OMD Certification Test.

The OMD On-boarding tools are intended to help clients ensure their readiness for the implementation before joining the Open Test, Certification Test and Market Rehearsal (MR) as required by HKEx.

OMD On-boarding tools support clients' capacity and performance tests via allowing canned data to be replayed at various fixed rates. Clients can also make use of the OMD On-boarding tools for testing their own system development and enhancements.

Clients should however note that the first version of the On-boarding Tools (including the canned data) aims to provide clients basic ideas of how OMD works and enable them to start the development and testing of their OMD feed handler earlier if they wish to. Since the development of OMD is still in progress, the On-boarding Tools will be further enhanced upon the completion of the OMD development. The enhanced On-boarding Tools will be distributed to clients once available.

Note to indirect connection clients: The on-boarding tools with canned data can also be provided to indirect connection vendors on request. Indirect connection vendors are recommended to check with their feed providing vendors whether the OMD on-boarding tools are suitable for their use.

6.2 End-to-end Open Test
(for direct connection clients only)

OMD End-to-end Open Test environment will be available in the following timeslots every trading day from Monday to Friday tentatively from late November 2012 to early March 2013, except those slots reserved for certification test (see Section 6.3 below), for direct connection clients to conduct thorough tests for their systems prior to the certification test:

    Normal Session (end-to-end test environment)   :   9:30am – 5:00pm
    Volume Session (controlled environment)   :   5:30pm – 6:30pm

Normal Session will provide market data concurrently generated by the test trading activities triggered by the Exchange Participants in the same session with some load generation data. Volume Session will provide market data in controlled manner in order to facilitate provision of day-end image to clients for data verification.

Direct connection clients who plan to join the first batch of OMD rollout (tentatively May 2013) should complete installation of SDNet lines (or HKEx Service Network (HSN) connectivity at HKEx Hosting Data Centre), to OMD testing environment about 2 weeks prior to the commencement of the Open Test.

A separate notice will be served in October 2012 to provide details of the test and the exact schedule of the Open Test when it is confirmed.

6.3 <u>Certification Test</u>
(Mandatory for direct connection clients)

All direct connection clients are required to perform and pass the certification test as required by HKEx <u>tentatively from January to March 2013</u>. Certification test will be conducted in the controlled environment. Certification test slots will be scheduled for 4 non-consecutive weeks from January to March 2013. Direct connection clients will be required to confirm their enrollment for the certification test slot tentatively by December 2012 subject to their readiness.

Certification test aims to ensure that clients systems have been properly developed and tested with the ability to receive and process the OMD market data properly and perform all necessary recovery function, including line arbitration, retransmission service and refresh service. It is however noted that some clients might consider retransmission service unnecessary for their data recovery. Clients are allowed to get waiver from HKEx by confirming their plan of not adopting the retransmission service in the Feed Enrollment Form (Enclosure 1). Clients will then be waived to perform the certification test on retransmission service. Only those clients who have passed the certification test on retransmission service will be granted the right to get access to the retransmission server.

Only direct connection clients who declared their successful completion of the Certification Test are allowed to proceed to the Market Rehearsals.

Feed-providing vendors should provide testing facility to their indirect connection clients to enable them to fully verify the capability of their system of handling the OMD data. Feed-providing vendors should declare the readiness of the indirect connection clients to HKEx.

HKEx will issue the Certification Test Document to direct connection clients tentatively by September / October 2012 and require the direct connection clients' enrollment on the certification test slots by December 2012.

<u>Note to indirect connection clients</u>: Indirect connection clients who will receive the market data in OMD original format from the feed-providing vendors should also complete the same set of certification test cases as per the direct connection clients and declare their result and readiness directly to HKEx. Indirect connection clients are advised to consult their direct connection vendors.

6.4 <u>Market Rehearsals & Post Release Test</u>
(Mandatory for direct connection clients)

Other than the above preparatory tests, direct connection clients are also expected to take part in the market rehearsals and the post release test tentatively in Apr/May 2013 (Saturdays) using the production environment before target launch day. Volume test session will be conducted in Market Rehearsals. Feed-providing vendors are advised to offer adequate environment to their indirect connection clients to perform the Market Rehearsals and declare their Market Rehearsals accordingly. Details of the market rehearsals and post release test will be further announced.

<u>Note to indirect connection clients:</u> Indirect connection clients are advised to conduct the Market Rehearsals as far as possible to ensure their readiness for OMD production. They should consult their feed-providing vendors about the

environment setup.

7. Rollout Arrangement

7.1 Stabilisation Period

Upon the successful completion of the Post-Release Test on a dedicated Saturday tentatively in May 2013, the OMD will be rolled out for production use. As the contingency measure for OMD rollout, there will be a 2-weeks stabilisation period to ensure OMD, clients' systems interfacing with OMD and their associated downstream services are operating smoothly. During the stabilisation period, clients will be required to ensure that their systems are able to connect to both MDF* and/or MDF 3.8 datafeeds and their subscribed OMD feed(s) concurrently. Since the transmission protocol and network setup for OMD will be different from those for MDF*/MDF3.8, clients are strongly advised to maintain two sets of systems and lines connecting to both MDF*/MDF3.8 and OMD during the stabilisation period so that clients can be able to switch back to receive data from MDF*/MDF3.8 when necessary.

7.2 Subsequent Batches

Clients are strongly advised to join the OMD first batch rollout tentatively in May 2013. Any clients who fail to complete the above Certification Test and Market Rehearsals of First Batch will be arranged to join the subsequent batches.

2013 (Tentative Schedule)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st Batch					Rollout ▲	3-month parallel run with MDF 3.8						
2nd Batch								Rollout ▲	2-month parallel run with MDF 3.8			
3rd Batch											Rollout ▲	MDF 3.8 Phase Out ▲

7.3 Legacy Feeds Decommissioning Schedule

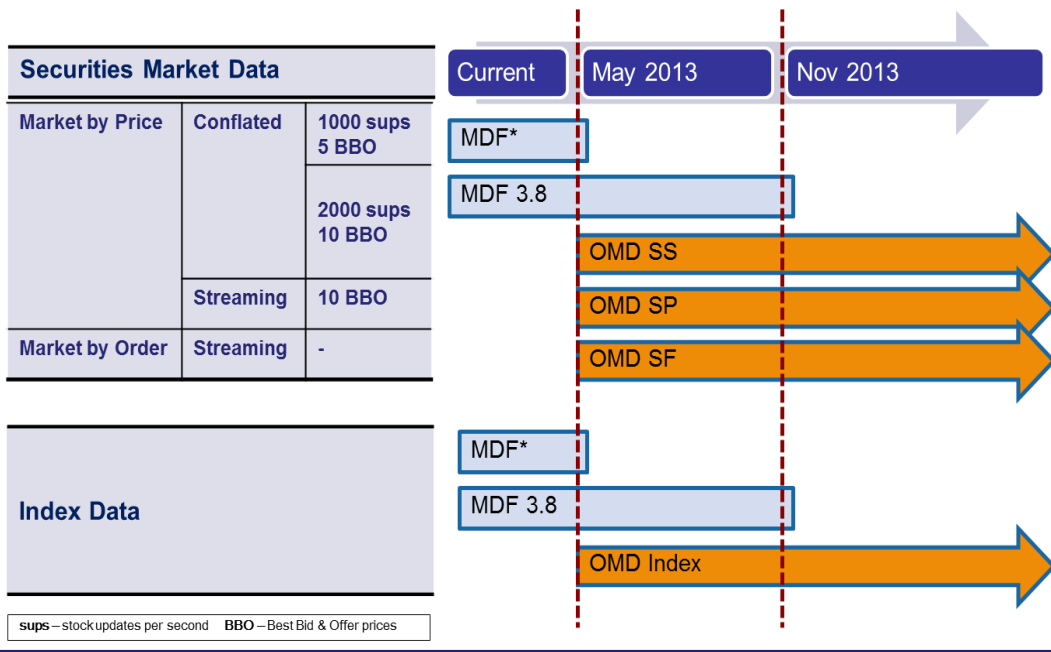MDF* and MDF 3.8 will be terminated with the decommissioning plan as follows.
- MDF* will be terminated upon lapse of 2-week stabilisation period of First Batch rollout.
- MDF 3.8 will be terminated 2 weeks after the Last Batch rollout.

Clients who are unable to migrate to the OMD in time will need to prepare for switching to contingency source, i.e. indirect connection via feed-providing vendors.

Securities Market Data			Current	May 2013	Nov 2013
Market by Price	**Conflated**	**1000 sups 5 BBO**	MDF*		
		2000 sups 10 BBO	MDF 3.8		
				OMD SS	
	Streaming	**10 BBO**		OMD SP	
Market by Order	**Streaming**	**-**		OMD SF	

Index Data	Current	May 2013	Nov 2013
	MDF*		
	MDF 3.8		
		OMD Index	

sups – stock updates per second   **BBO** – Best Bid & Offer prices

Note to indirect connection clients: Indirect connection clients are advised to contact their feed-providing vendors to plan for their contingency arrangement.

8. Enquiry Contacts

Clients who have questions over the implementation activities of OMD Securities & Index can email your enquiries to OrionMarketData@hkex.com.hk or contact the following colleagues:

OMD Securities & Index – On-boarding Support & Activities
- Vendor Support & Data Management
      Vendor Support Hotline   Tel : (852) 2211 6558

OMD Fees and Licensing Issues
-   Sales & Marketing
      Ms. Yvette Ying   Tel : (852) 2840 3009
      Ms. Ada Lee   Tel : (852) 2840 3520

OMD Project Issues
- Business Development
      Ms. Maggie Man   Tel : (852) 2840 3650
      Ms. Winnie Leung   Tel : (852) 2840 3611

9. Reference Materials

In addition to this information package, vendors should also make reference to the following documents that enclosed separately.

For all Clients	
OMD Securities & Index Feed Enrolment Form	Enclosure 1
OMD Securities Market and Index Datafeed Products Interface Specifications – Binary Protocol (latest version)	HKEx website
Information Paper on OMD Securities Market Implementation	HKEx website

For Direct Connected Clients ONLY	
SDNet/2 Accredited Vendors Information	Enclosure 2
OMD Securities & Index - Developers Guide	Enclosure 3
OMD Securities & Index - Connectivity Guide	Enclosure 4
OMD Securities & Index: On-boarding Tools Package (User guide, Tools & Canned Data) in DVD	Enclosure 5 (Delivered separately)

10. Action Items & Time Table

To facilitate clients' preparation for first batch of OMD Securities & Index on-boarding, please find below the tentative schedule for the initial roll-out:

Action Items	Activities	Tentative Dates	2012						2013				
			Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1. OMD On-boarding tools Testing	Dispatch of OMD On-boarding tools packages	Jul 2012	▇										
	Clients to develop their system and perform on-boarding tools testing on their system.	Jul 2012 – Nov 2012	▇	▇	▇	▇	▇						
2. OMD Feed Enrolment	Direct connected & indirect connected clients to complete and return OMD Feed Enrolment Form to HKEx-IS.	31 Aug 2012		▇									
3. OMD End-to-end Open Test	Direct connected clients to test their system in the OMD open end-to-end test environment	Nov 2012 – Jan 2013					▇	▇	▇				
4. Line Application/ Installation	Direct connected clients to install SDNet/2 or HSN testing lines at HDC	Sep 2012 – Nov 2012			▇	▇	▇						
	Direct connected clients to install SDNet/2 production lines	Mar 2013									▇		
5. Certification Test (Mandatory)	Direct connected clients to participate the certification test and declared their readiness.	Jan 2013 – Mar 2013							▇	▇	▇		
6. Market Rehearsals (Mandatory)	Direct connected clients to participate and confirm results of the market rehearsals.	Apr/May 2013										▇	▇
7. Post Release Test (Mandatory)	Direct connected clients to participate and confirm results of the post release test.	May 2013											▇
8. First Batch Rollout of OMD	OMD goes live after successful completion of post-release test.	May 2013											▇

- End -