



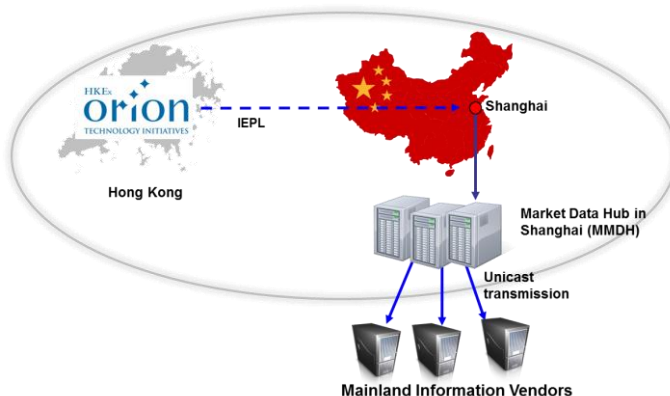
INFORMATION SHEET

HKEx Orion Market Data Platform Mainland Market Data Hub

1. Overview

What is Mainland Market Data Hub (MMDH) and its relationship with HKEx Orion Market Data Platform (OMD)?

Mainland Market Data Hub (MMDH) is HKEx’s first infrastructure footprint in Mainland China and part of the implementation of HKEx Orion Market Data Platform (OMD). OMD will be deployed in Shanghai for establishment of the MMDH as the point of presence to facilitate local clients to easily gain access to HKEx market data. Dedicated International Ethernet Private Lines (IEPL) will be established for connection from MMDH in Shanghai to HKEx OMD central system servers in Hong Kong, delivering market data of HKEx markets and indexes in a common message format.



Who is it for?

Clients interested in disseminating the HKEx securities market data in Mainland China, who wants to connect to HKEx directly while avoiding high cross-border leased line costs.

What does it provide?

MMDH initially supports distribution of the HKEx securities market data and index information only. The datafeed products to be offered upon its rollout include OMD Securities Standard (SS) and Index Feed (Index), and a complimentary feed, namely Odd Lot Order Feed (OLO). Subject to the market demand, HKEx may consider adding other premium datafeed products of securities market as well as derivatives market in the future.

2. Key Features

Clients would enjoy various benefits if they choose to subscribe to HKEx market data from MMDH in Mainland:

More cost-effective direct access solution to Mainland clients

MMDH provides a direct access solution to Mainland clients by providing a direct connection point established in Shanghai with lower line cost than direct cross-border leased lines connection to Hong Kong by clients themselves.

Full set of HKEx market data entitled for each product feed

MMDH enables HKEx to establish points of presence for high quality market data distribution in Mainland China. Clients will receive the complete set of market data of the subscribed product feed as if they are receiving directly from the HKEx OMD central system in Hong Kong.

Low latency

OMD is an integrated low-latency market data platform. With the deployment of OMD, MMDH can support low latency transmission of market data to local clients in Shanghai.

High resilience

HKEx will operate the MMDH in two data centres in Shanghai, one as the primary site and the other as the secondary site. High availability (HA) setup will be enabled for both sites in order to minimize service interruption due to hardware failures.

3. Products

OMD offers a new set of datafeed products for HKEx securities market. MMDH will be offering the following datafeed products in Shanghai:

Datafeed Product		Update Rate	Content	Estimated Bandwidth
1.	Securities (“SS”) <i>Standard</i>	2,000 stock updates per second	<ul style="list-style-type: none"> Level 1 (Bid/Ask quotations) all trade tickers (timestamp: HH:MM:SS) Level 2 (10 market depths) Broker queues 	10Mbps
2.	Index Feed	Streaming, subject to the source	S&P/HKEx indices and selected indexes from CSIC and HSIL	Not significant (<i>can be included in SS 10Mbps line</i>)
Complimentary Service Feed				
1.	Odd Lot Order (“OLO”)	Streaming	Odd lot market by order information	Minimal (<10Kbps)

4. Technical Highlights

- 4.1. Unicast Transmission:** Different from OMD central system, OMD delivers market data via Mainland Market Data Hub through unicast transmission, allowing for stable and reliable transmission with minimal bandwidth requirement.
- 4.2. Binary Protocol:** Binary protocol is designed for subscribers seeking maximum processing efficiency.
- 4.3. Connection Options:** Two connection options are offered to clients.
 - Standard configuration: A standard configuration will include single live connection. Minimum 3 lines will be required, two connected to the MMDH primary site and one connected to MMDH secondary site.

- Non-standard configuration: An additional live connection added to the standard service will cover two live connections to each site. In this configuration, 4 lines will be required, i.e. two connected to the MMDH primary site and two connected to MMDH secondary site.

Clients are advised to check the OMD Fees Schedule for licence fees applicable to different connection options.

4.4. Local Leased Line Setup by Clients: Clients will contact local Telco companies to place orders for leased lines. Local Telco companies should provide point-to-point Ethernet based service for the connection between MMDH sites and the client’s servers. At MMDH sites, HKEx will provide a 100/1000 Base-T network interface for the connection of the client’s Telco line.

5. Implementation

The implementation schedule of MMDH is summarized as follows:

MMDH Implementation	Q4 2012	Q1 2013	Q2 2013	Q3 2013
Seminar / Briefing Sessions				
Publication of Interfaces Specification				
Feed Enrollment				
Distribution of On-boarding Tools (including simulator and canned data)				
System Preparation by Customers				
Line Installation				
Open Test and Certification Test				
Market Rehearsals				
Post Release Test				
MMDH Rollout				

5.1 Publication of Interface Specifications

Interface Specifications for OMD securities and index datafeed products will be published in Nov 2012. Clients who are interested to connect to MMDH are advised to plan for the corresponding system development and infrastructure setup. Technical briefing sessions will be arranged in due course.

5.2 Enrollment

MMDH is tentatively scheduled for roll out by Q3 2013. The enrollment will be kicked off from Dec 2012. Clients who are interested to connect to MMDH may refer to the [OMD fees schedule](#) at HKEx website.

5.3 Availability of On-boarding Tools

In order to assist clients in developing and testing their own systems, a set of on-boarding tools, including canned data, feed handler code skeleton, simulators of real-time data

transmission, etc. will be available in Dec 2012. With the on-boarding tools, clients can effectively test their systems before conducting further testing in the MMDH test environment.

5.4 *Line Installation Ready for Open Test*

Clients subscribing to the datafeed products available in MMDH should plan for installation of leased lines for connecting to our MMDH primary and secondary sites according to the bandwidth requirement. Prior to testing in MMDH test environment, at least one leased line should be installed and connected to the MMDH primary site in Shanghai. Clients who wish to join the initial rollout are advised to ensure that line installation is completed by end Q1 2013.

5.5 *Open Test*

To facilitate further system testing by clients, a test environment with similar functionality to the final production MMDH will be offered in Q2 2013. Customers can connect their systems to the MMDH test environment to verify their systems.

5.6 *Certification Test*

Certification test will be conducted in Q2 2013 after the Open Test to ensure that client systems have been properly developed and tested and are able to successfully receive market data from MMDH and perform all necessary recovery functions. Clients are required to pass the certification test before taking part in the Market Rehearsals to be conducted in early Q3 2013.

5.7 *Market Rehearsals*

As the final preparation and verification of readiness before production rollout, Market Rehearsals will be conducted over a number of weekends in Q3 2013. Prior to participating in Market Rehearsals, clients are required to install full set of leased lines to the production systems at MMDH primary site and backup site. High trading activities with large volume of market data will be simulated during the Market Rehearsals. Clients who wish to subscribe to MMDH at the initial rollout will be required to join to prove their system readiness in Market Rehearsals.

For more information:

Please visit www.hkex.com.hk/MarketData

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Appendix A Key Features Comparison among Securities Standard through MMDH and MDF 3.8

DATA CONTENT	Securities Standard	MDF 3.8
Real-time Data Content	<p><i>Securities market data:</i></p> <ul style="list-style-type: none"> All trade tickers (timestamp: HH:MM:SS) Odd Lot market by order information in separate feed (OLO) <p><i>Third party content:</i></p> <ul style="list-style-type: none"> No third party content (index data in separate feed) 	<p><i>Securities market data:</i></p> <ul style="list-style-type: none"> All trade tickers (timestamp: HH:MM) Odd Lot market by price information <p><i>Third party content:</i></p> <ul style="list-style-type: none"> Selected CSIC, HSIL and S&P co-branded indices HKFE Futures Products
Static Data Content	<p>To streamline the legacy features, the following data fields currently available at MDF 3.8 will no longer be available at SS:</p> <ul style="list-style-type: none"> Securities Short Name in Big 5 Intra-day shortselling field Automatch Flag field Market Trading Timetable Spread table Information Pages (e.g. 785, 788 etc.) Linked security information Certain instrument specific static data fields with “blank” value under XF element type of MDF 3.8 <p>The following new items will be offered at SS:</p> <ul style="list-style-type: none"> FX rates <p>The following data fields will be changed at SS:</p> <ul style="list-style-type: none"> Securities Short Name in Traditional Chinese coded in GCCS will be changed to Unicode including HKSCS (Hong Kong Supplementary Character Set) Securities Short Name in Simplified Chinese coded in GB will be changed to Unicode 	
TECHNICAL ASPECTS		
Stock Update Rate (subject to further upgrade)	2,000 stock pages per second	2,000 stock pages per second
Message Protocol	Binary (proprietary & similar to UTP-MD)	Binary (HKEx proprietary)
Transmission Protocol	Unicast	Unicast
Bandwidth Requirement	10Mbps	6Mbps
Recovery	<ol style="list-style-type: none"> Restart – recovery of small amount of message loss. Refresh – recovery of large message loss or late connection by clients. The latest market snapshot will be provided to allow clients to quickly establish the current state of the market. 	<ol style="list-style-type: none"> Retransmission – recovery from the last received message Completed database download – provide latest market data image for recovery from long service interruption or late connection to MDS/3.8.