

Information Package
for
Clearing Members
on
Phase 2 – OTC Clearing System Network Set-up to
Securities and Derivatives Network/2
(SDNet/2)

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1. Introduction

The Securities and Derivatives Network (SDNet/2) is designed for high resilience and its circuits are powered by optical fibres with higher bandwidth options and lowered round-trip latency.

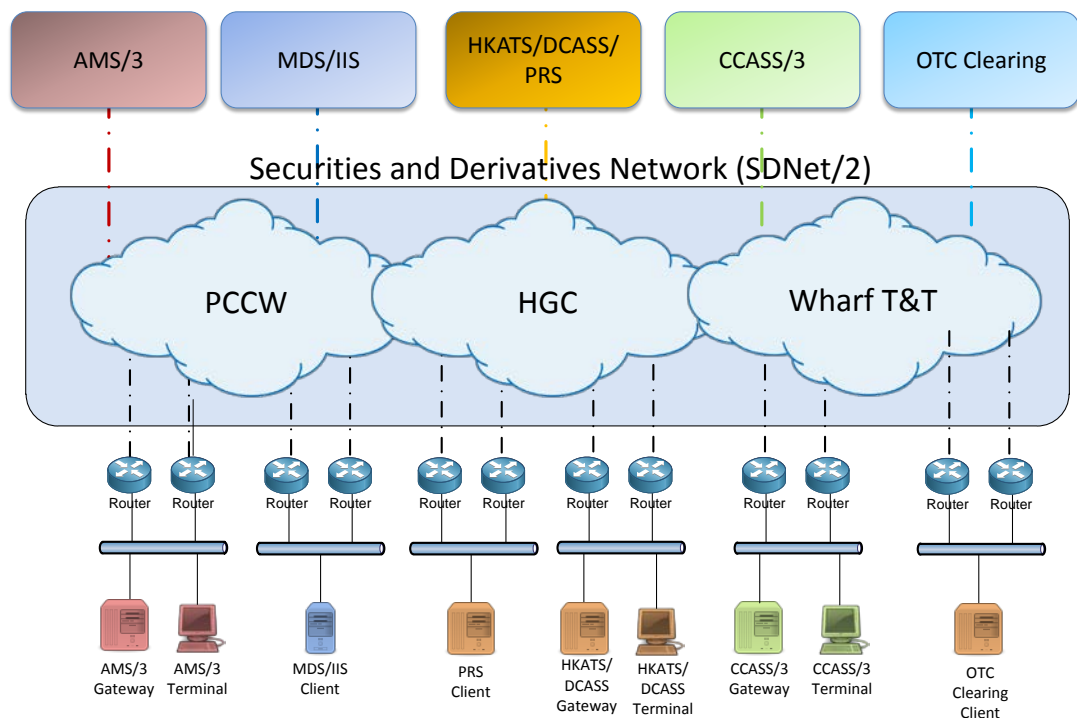
SDNet/2 will adopt a multi-carrier network approach with circuit services provided to Clearing Members (CMs) by multiple vendors accredited by HKEx (Accredited Vendors). CMs can select one or more vendors to install SDNet/2 circuits for their trading devices based on their business needs and pay the circuit charges directly to the respective vendors.

This Information Package is prepared to provide the CMs with: 1) an overview of the SDNet/2; 2) the multi-vendor model of the SDNet/2; 3) the schedules and arrangements for network migration to SDNet/2; and 4) an overview of CMs' involvements in supporting the migration for the clearing systems.

2. Overview of SDNet/2

2.1 SDNet/2

SDNet is a consolidated network infrastructure to support multiple market system networks. The main systems supported by SDNet include the OTC Clearing Web Portal.



(Remark: HGC does not provide OTC connection Service)

SDNet/2 adopts the prevalent Optical Ethernet technology with higher circuit bandwidth and lower network latency. CM circuits will be provisioned with optical fibre, which can be scaled up to 1Gbps. The enhancement of SDNet/2 also includes lowered round-trip network delay with average below 1.5 milliseconds¹.

2.2 Multi-Vendor Model and Accredited Vendors of SDNet/2

SDNet/2 will be provided by different network vendors to the CMs. HKEx has defined a set of commercial and technical requirements for operating the SDNet/2 infrastructure. Vendor has to pass all requirements defined by HKEx, to become an **Accredited Vendor**. To remain as an Accredited Vendor, vendors are required to meet and maintain all service levels defined by HKEx for ongoing operations.

The Accredited Vendor will have a validity period up to end July 2015.

Through a comprehensive accreditation process, initially, 2 vendors have been appointed to provide SDNet/2 network services for OTC connection. These vendors are (in alphabetical order):

- Hong Kong Telecommunications (HKT) Limited (also known as PCCW)
- Wharf T&T Limited (Wharf T&T)

2.3 Differences in SDNet/2

Higher capacity and performance – SDNet/2 network offers higher bandwidth capacity for rapid traffic volume growth immediately. Depending on the actual HKEx's market system requirements, the bandwidth of SDNet/2 circuit can be scalable to 1Gbps. The performance of core network equipment used in SDNet/2 is also upgraded to support a lowered round trip network delay (RTD).

Improvement in reliability – With advancement in network resilience technology, SDNet/2 will be operated with a network availability of 99.999%.

Wider choice of network vendors – With SDNet/2, CMs are given choices to select their preferred network vendors, among the Accredited Vendors. CMs can compare different offers from the network vendors and select the network vendor(s) that best meet their needs.

¹ Please refer to Appendix A for districts in Hong Kong with average of 1.5 milliseconds round-trip latency. Latency is measured with 512 -byte packet.

2.4 Accredited Vendor Services of SDNet/2

With SDNet/2, CMs shall pay the circuit charges directly to their selected Accredited Vendor(s).

Accredited Vendors will provide the billing, technical support and maintenance services of the SDNet network directly to CMs. For on-going support of the network services, CMs are required to report network problems and other network related enquiries to the Accredited Vendors directly. If necessary, the Accredited Vendors may also report the network problem to HKEx.

CMs will need to change IP address when they change their SDNet/2 Accredited Vendor. For circuit relocation with the same Accredited Vendor, the Accredited Vendor may also propose to change IP address in order to optimize the network path according to the new location of the CMs.

2.5 Prices of SDNet/2

All Accredited Vendors will offer SDNet/2 services to CMs according to the circuit capped price scheme by which the maximum prices for different bandwidth circuits are capped. However, Accredited Vendors are allowed to offer CMs SDNet/2 circuits at discounted prices. Apart from circuit rental charges, other charges for services such as upgrade, relocation also apply. CMs are advised to inquire price information from the Accredited Vendors. More information of the capped price scheme can be found in Appendix A.

3. SDNet/2 Phase 2 – Key Milestones

The key steps of SDNet/2 installation secured line installation are summarized as follows:

Stage	Activities for CMs	Remark
1	CMs APPLYING SDNET/2 CIRCUITS	
	<input type="checkbox"/> HKEx provides information pack	
	<input type="checkbox"/> CMs select and apply for circuits from Accredited Vendors according to HKEx's notifications	
2	IMPLEMENTATION OF CIRCUIT INSTALLATION	
	Step 1 Accredited Vendors provision for fibre cable inside CMs' office buildings. CMs may be requested to coordinate with their Building Management Office (BMO)	On a needed basis
	Step 2 Accredited Vendors conduct site survey at the CMs' offices for cable routing design and environment set up	-
	Step 3 Accredited Vendors conduct on-site cable installation at the CMs' offices	Around 3 hours (Mon – Fri: 5:15pm to 9:00 pm, Sat: 9:00am – 6:00pm)
	Step 4 Accredited Vendors conduct on-site installation of routers at the CMs' offices.	Router Installation Around 3 hours (Mon – Fri: 5:15pm to 9:00 pm, Sat: 9:00am – 3:00pm)

4. Involvement of CMs in SDNet/2 Circuit Installation

4.1 CM Circuit Application

Under SDNet/2, CMs are required to select one or more Accredited Vendors to install SDNet/2 circuits for their trading devices. The following paragraphs describe how CMs should apply SDNet/2 circuits from the Accredited Vendors.

4.1.1 Determining SDNet/2 Circuit Requirements

Under SDNet/2, HKEx will define the minimum bandwidth requirements of OTC Clear network for production circuits and their corresponding testing circuits.

CMs are required to subscribe not lower than the specified minimum bandwidth. The initial minimum bandwidth requirements for network migration to SDNet/2 are as followings. CMs may subscribe more than the minimum bandwidth from their Accredited Vendors on a need basis.

System	Number of concurrent users	Min. Bandwidth Requirement
Production Circuit	1 - 2	1 Mbps
Production Circuit	3 - 4	2 Mbps

Subject to market situation, HKEx may consider uplift the bandwidth requirement in the future and CMs may need to upgrade their SDNet/2 circuit bandwidth accordingly, for which, Accredited Vendors may charge for one-off upgrade cost in addition to higher bandwidth rental. Please see Appendix A for Price of SDNet/2 Circuit.

4.1.2 How to apply

Submission of Application to Accredited Vendors

CMs should firstly approach Accredited Vendors to get the SDNet/2 application form and information. The Accredited Vendors' contact numbers and email addresses are set out in Appendix A. CMs should compare offers from the Accredited Vendors, read carefully all the terms and conditions as specified on the application form and the relevant material before completion of the application form.

Application of Circuit to Multi-vendor

For CMs who are going to install more than one set of SDNet/2 circuit, they can apply for different sets of circuits from different Accredited Vendors. Please note that circuits within a dual-circuit configuration must be subscribed from the same Accredited Vendor.

Minimum Subscription Period

The minimum subscription period of SDNet/2 circuits is 3 months. However, Accredited Vendors can sign longer contracts with CMs. CMs should carefully review the prices and other terms and conditions of different bandwidth options before signing contracts with the Accredited Vendors, as switching vendors may incur addition cost before the contract expiry.

4.2 CM Circuit Installations

SDNet/2 adopts the Optical Ethernet technology. Accredited Vendors' field engineers have to lay fibre cables in the CM offices and install new network equipment for each CM circuit. To facilitate smooth installation of SDNet/2 circuits by Accredited Vendors, CMs are required to provide the following assistance:

- a. CMs are required to ensure the necessary facilities (such as AC power sockets and space) are available before circuit installation by referring to the Installation Guidelines as set out in Appendix B and support the installation of new network equipment in their premises during non-office hours.
- b. CMs may be requested to coordinate with their Building Management Office in order to allow the laying of fibre cables in their buildings. If considered necessary, Accredited Vendors will inform the involved CMs of such requests.
- c. CMs are requested to allow site visits by Accredited Vendors' field engineers for pre-installation study, fibre pre-wiring, and network equipment installation. After the site survey, Accredited Vendors will confirm with the CMs on fibre circuit installation date and router installation date. Accredited Vendors will also advise CMs of any resource shortage such as AC Power Supply.

CMs are also advised to complete the following preparation tasks as early as possible:

- a. Provide enough space for the location of new network equipment.
- b. Decide on open wiring or concealed wiring for the new circuits. If concealed wiring is needed, prepare to provide cable conduit and get approval from their building management if necessary
- c. Select an on-site contact person for support of the installation work by the Accredited Vendors. Such person should be familiar with the requirements stipulated in the Installation Guidelines in Appendix B.

4.3 Market Readiness Activities

To ensure the readiness of the SDNet/2 for the OTC Clearing System, a series of testing for market readiness will be conducted before the launch of OTC Clearing services to CMs. The detailed test plan will be outlined in separate test plan documents.

5. Cost for SDNet/2 Installation

CMs may bear the cost on the upgrade from testing circuits to production circuits and additional equipment to be installed such as standard cabinet, power sockets and the related tray or partition as shown in Appendix B and the additional resources requirements due to the migration activities.

For CMs using data centre services for hosting their equipment, they may bear the cabling fee, connection fee and additional equipment space that are charged by the data centre service provider.

6. Help Desk

For any queries regarding SDNet/2 implementation for OTC Clearing System, CMs can contact the following numbers for assistance:

Accredited Vendors Contacts:

- For SDNet/2 circuit application, installation arrangement and technical questions

	PCCW	Wharf T&T
Phone:	2888-2929 or dedicated Account Manager	2112-9000
Service Hours:	Monday – Friday: 9:00 – 18:00 Saturday: 9:00 – 13:00 (except Public Holidays)	Monday – Friday: 9:00 – 18:00 Saturday: 9:00 – 13:00 (except Public Holidays) 24-hour Hotline: 121-388
Email Address:	sdnet@pccw.com or E-Mail to dedicated Account Manager	sdnet@wharftt.com

HKEx Contacts:

- For SDNet/2 technical support questions, please send email to: sdnet@hkex.com.hk
- For SDNet/2 general enquiry, please call the respective General Enquiry Hotline: OTC Clearing – 2211-6530.

7. Recommended Installation Requirement and Network Data Summary

The following installation standard is recommended for OTC Clear clearing members.

As there will be a number of key enhancements of OTC clearing functionalities in near futures, CMs are commended to keep a Development Link SDNet/2 connection for the testing purposes.

A) Accessibility to testing environment of OTC Clear

1. Timeline for SDNet/2 installation: Complete installation at least 2 weeks prior to the start of UAT testing
2. Circuit Purpose: **Development Link.**
3. Circuit Type: Single Link or Dual Link
4. Bandwidth: Minimum 1Mbps

**CMs should consider their internal network requirements and decide on the requirement of the testing connection:

- (i) Number of development link(s) to be installed
- (ii) Location of development link(s) to be installed
- (iii) Resilience requirements (e.g. Dual Link or installation in multiple sites)

B) Accessibility to production environment of OTC Clear

1. Timeline for SDNet/2 installation: Complete installation at least 2 weeks prior to the start of production connectivity testing.
2. Circuit Purpose: **Production Link.**
3. Circuit Type: Production Sites - Dual Link
Contingency Sites - Single Link or Dual Link
4. Bandwidth: Production Sites - Minimum 2Mbps
Contingency Sites – Minimum 1Mbps

Network Data Summary:

URL to OASIS application:

eSelfService: <https://www.otcclearinghk.com/eSelfService>

Settlement Limit Enquiry: <https://www.otcclearinghk.com/OnlineEnquiry/>

What-if simulator: <https://whatif.otcclearinghk.com/recon-services/>

For OTC Secure File Transfer (sFTP) for OASIS Reports Download Services:

mft.otcclearinghk.com

Clearing Member's subnet range for different service providers:

PCCW: 10.58.0.0/24 to 10.58.127.0/24

WTT: 10.59.0.0/24 to 10.59.127.0/24

*CM will be assigned to a 24-bit subnet which depends on which carrier they choose.

IP address range usable by Clearing Members is:

x.x.x.65 ~ x.x.x.190

Please note that IP addresses outside these ranges are used and reserved by HKEx.

Routing setup at Client PC/Server:

Route 10.153.11.0 mask 255.255.255.0 (Virt-A "x.x.x.254")

Route 10.154.11.0 mask 255.255.255.0 (Virt-A "x.x.x.254")

Services ports to be opened in the firewall.

Services	Port	IP Address (Testing environment)	IP Address (Production environment)
DNS	53/udp	To be advised in UAT test plan	10.154.11.21 (Preferred) 10.153.11.21 (Alternate)
HTTPS (Web server – OASIS Collateral Management Portal)	443/tcp	To be advised in UAT test plan	10.154.11.22 (Primary) 10.153.11.22 (Secondary)
HTTPS (Web server – Settlement Limit Enquiry)	443/tcp		10.154.11.22 (Primary) 10.153.11.22 (Secondary)
HTTPS (Web server – OASIS Margin Simulator Portal)	443/tcp	To be advised in UAT test plan	10.154.11.23 (Primary) 10.153.11.23 (Secondary)
OTC Secure File Transfer (sFTP) for OASIS Reports Download Services	10022/tcp		10.154.11.71 (Primary) 10.153.11.71 (Secondary)

HKEx Contacts:

For questions and queries on the installation recommendation and network data, please send email to OTCmembership@hkex.com.hk or call OTC Clearing onboarding team at **2211 6538**.

Appendix A – SDNet/2 Accredited Vendors Information

SDNet/2 services are provided by Accredited Vendors for the provision of circuits from CM 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 CMs.

Initially, two Accredited Vendors have been selected and accredited to provide SDNet/2 network services. These vendors which provide OTC connection service are (in alphabetical order):

Hong Kong Telecommunications (HKT) Limited (also known as PCCW)
Wharf T&T Limited (Wharf T&T)

For details of SDNet/2 circuit price information / technical specification / service level, please refer to:

http://www.hkex.com.hk/eng/market/sec_tradinfra/Documents/SDNet2_Pricing_Technical_Service%20Level_effective%20March%202016.pdf

Appendix B – Installation Guidelines

For the diagram of SDNet/2 network equipment, space requirements and power supplies, please refer to “SDNet/2 Installation Guidelines”:

http://www.hkex.com.hk/eng/market/sec_tradinfra/Documents/SDNet2_Installation%20Guide.pdf.