Orion Central Gateway (OCG) Connectivity Guide to Orion Trading Platform – Securities Market (OTP-C)

Version 2.0
27 July 2017

Table of Contents

1. Document Control

1.1 Change History

Version Number	Issue Date	Section Number	Status
1.0	30 June 2017	All	First Version
2.0	27 July 2017	Various sections – update HKEX name & logo, update PCCW to HKT, update Wharf T&T to WTT	Revised Version

2. Overview

To prepare the migration of the trading engine in HKEX securities market from AMS/3.8 to Orion Trading Platform – Securities Market ("OTP-C"), Exchange Participants ("EPs") have to validate their Broker Supplied Systems ("BSS") are compatible with OTP-C in the End-to-End ("E2E") Test environment.

This document aims to provide network configuration information and guidance to assist EPs and BSS vendors to setup their networks for making connection to OTP-C E2E Test environment through Orion Central Gateway ("OCG").

Details on Orion Market Data – Securities Market ("OMD-C") can be referred to "OMD Connectivity Guide for Securities Market and Index Datafeed Products" (http://www.hkex.com.hk/Services/Market-Data-Services/Infrastructure/HKEX-Orion-Market-Data-Platform-Securities-Market-OMD-C?sc_lang=en).

This document contains:

- Configuration information, i.e. IP addresses of the OCG system in the End-to-End Test environment
- Guidelines / policies for SDNet/2 and HKEX Service Network ("HSN") connection

NOTE: OTP-C E2E Test cannot be used for the on-boarding of BSS to AMS/3.8.

3. OCG End-to-End Test Network Configuration Information

This section mainly provides information for the connectivity of the BSS from the EP's end to HKEX's OTP-C E2E Test environment. It covers the following topics:

- Network configuration at EP's end (Single circuit)
- Sharing Testing SDNet/2 Circuit among OCG and OMD-C
- OTP-C E2E test environment access for HSN users

3.1 Network Configuration at EP's End (Single Circuit)

HKEX Development Site

OCG Server Farm
10.1.93.0/24

SDNet/2 WAN

SDNet/2
Router A

Virt-IP = Virtual Gateway IP at Client Subnet

Routing Setup at Client Servers:
Route 10.1.93.0 mask 255.255.255.0 next-hop Virt-IP
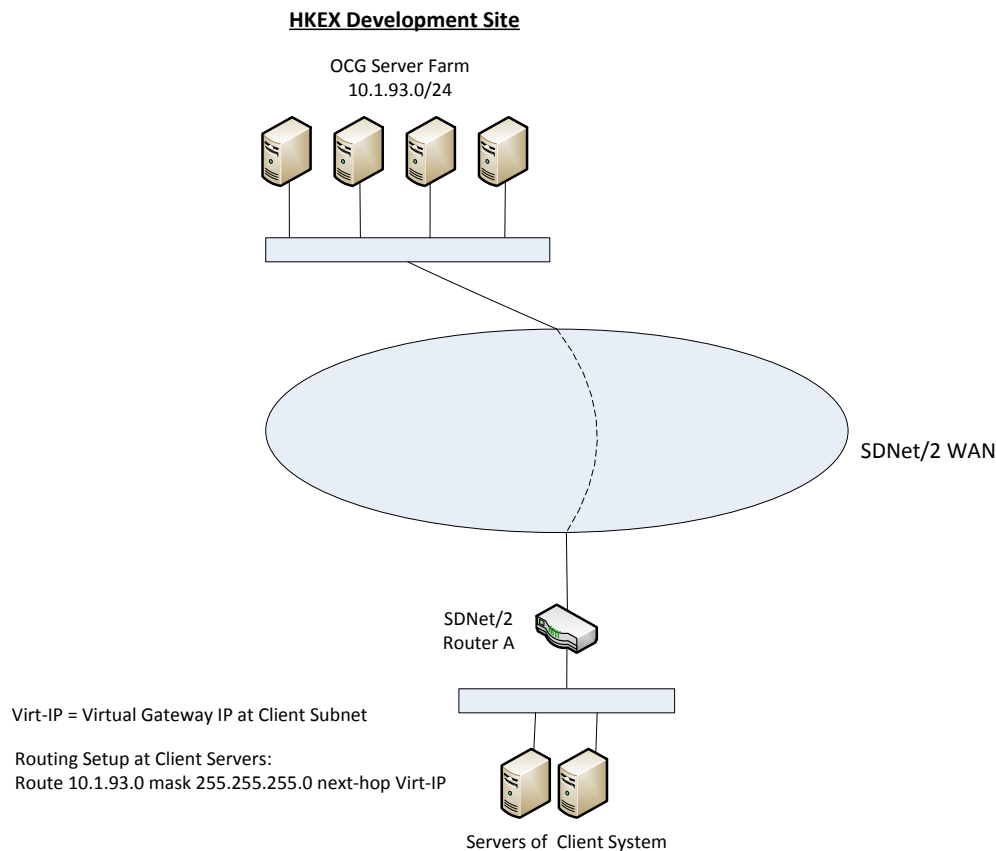
Servers of Client System

Figure-1 End-to-End Testing Network for OCG (Single SDNet/2 Circuit)

Figure-1 provides an overview of the E2E OCG testing network setup for single SDNet/2 circuit.

The E2E test environment is carrier neutral. EPs can choose one or more of the following SDNet/2 Accredited Vendors:

- HGC
- HKT
- WTT

To conduct OTP-C E2E test, a single SDNet/2 testing circuit is required. If EP is having a testing circuit to the AMS/3.8 E2E test environment, this circuit can also connect to OTP-C E2E Test environment subject to bandwidth requirement. If EP does not have a testing circuit currently, a new testing circuit has to be applied from SDNet/2 Accredited Vendors.

When SDNet/2 Accredited Vendors receive the application form from EPs, they will install SDNet/2 router and provide the following requirements for EPs to configure switches:

Router Interface	Gigabit Ethernet Interface (Physical port is assigned by SDNet/2 Accredited Vendor)
Port Speed	Auto Sense up to 1Gbps
Duplex Mode	Auto Negotiation
HSRP/VRRP Group	61
IP Subnet	An IPv4 subnet (A.B.C.0) will be provided by SDNet/2 Accredited Vendor and the subnet mask is 255.255.255.0
Gateway IP	Virtual IP (Virt-IP) is A.B.C.254
EP's usable IP address range	EP may use **A.B.C.1 to A.B.C.223** to assign IP address for their BSS servers and network devices, The range from A.B.C.224 to A.B.C.254 are reserved by HKEX.

Note:

- EP's network switches MUST provide a single VLAN (Layer 2) connection for the single SDNet/2 router for HSRP/VRRP communication between themselves
- HSRP/VRRP group 61 is used for OCG. EPs should avoid using this group number in the SDNet/2 EP subnet
- BSS must be configured with the recommended IP address range within the allocated subnet
- All EPs have to submit their BSS IP addresses to HKEX for setting up E2E sessions with OCG E2E Test Server
- No routing protocol will be exchanged between SDNet/2 router and EP's network

3.2 Sharing Testing SDNet/2 Circuit among OCG and OMD-C
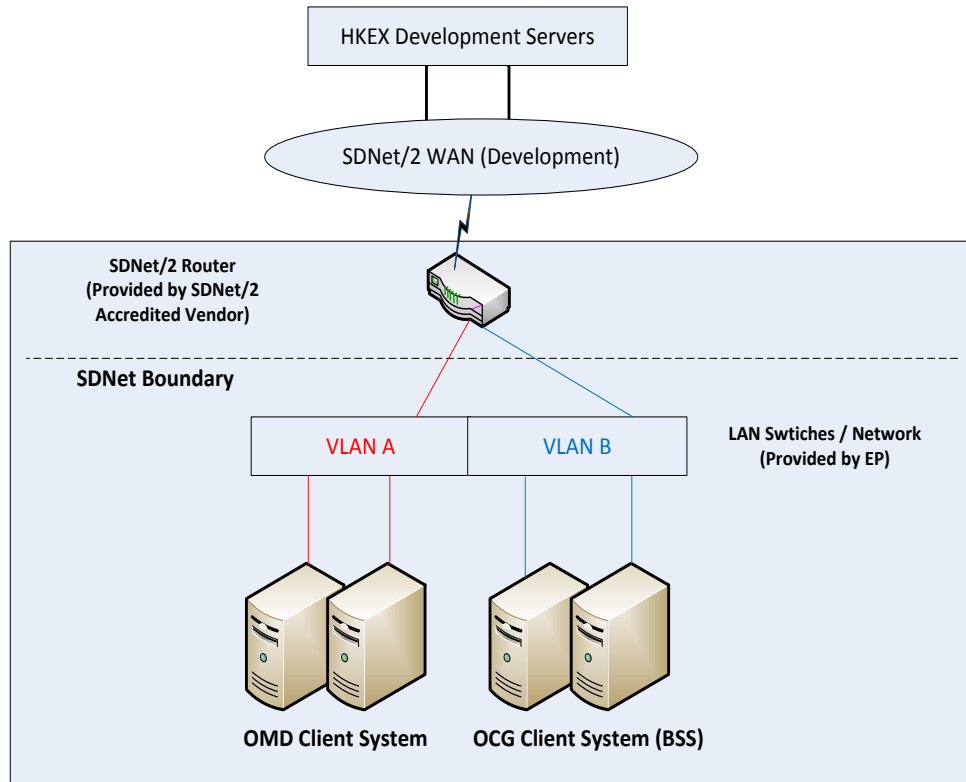
Figure-2 Sharing SDNet/2 Testing Circuit among OCG and OMD-C

For EPs who plan to receive market data via direct connection to OMD-C and want to get real time market data during the E2E test, OMD-C feed [i.e. either OMD-C(SS), OMD-C(SP) or OMD-C(SF)] is provided. If EPs wish to have OMD-C feed (for the E2E test) and OCG application running on the same testing circuit, please take note of the below minimum bandwidth requirement:

Applications	Minimum Bandwidth
OCG	1Mbps
OCG + OMD-C Feed {For OCG End-to-End test only}	3Mbps

Table-1 Bandwidth and Circuit Requirements for OCG and OMD-C on SDNet/2 Circuit

For EPs who plan to connect to both AMS/3.8 E2E Test environment and OTP-C E2E Test environment simultaneously by using the same testing circuit, bandwidth on OCG should be estimated based on below bandwidth requirement:

	Minimum Bandwidth Requirement ([1]) (FIX & Binary)
Trading	40 Kbps / Throttle
Drop Copy (Orders and Trades Option)	40 Kbps / Throttle ([2])
Drop Copy (Trades Only Option)	20 Kbps / Throttle ([2])

Table-2 Bandwidth Estimation for OCG

Note:
1. Minimum bandwidth requirement is also applicable to HSN.
2. Throttle calculation for Drop Copy session:
    - Drop Copy session includes trades and/or orders for all broker numbers assigned on it.

3.3 OCG E2E Test Environment Access for HSN Users

To facilitate EP application of testing to simulate HSN network in HKEX Data Center, subscriber can subscribe Hosting Services Testing Network (HSTN). A pair of 1G/100Mbps UTP ports is provided to each subscriber rack.

For details of HSTN network setup, EP may refer to the Interface Specification on Connectivity Services and Timing Service from Hosting Services, or contact HKEX Hosting Services team via email hssales@hkex.com.hk .

4. Other Guidelines on OCG Connections

4.1 Installation of SDNet/2 Circuits and HSN

4.1.1 SDNet/2 circuits

EPs are required to contact the SDNet/2 Accredited Vendors for installation of SDNet/2 circuits for OCG 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

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

5. Enquiry Hotline

	Contact No.	Email Address
For HSN service	2211-6447	hssales@hkex.com.hk
For SDNet/2 service		
Hong Kong Telecommunications (HKT) Limited	2888-2929 or dedicated Account Manager	sdnet@pccw.com or email to dedicated Account Manager
Hutchison Global Communications Limited	8196-1238	sdnet_hotline@hgc.com.hk
WTT HK Limited	2112-9000(Ordering) 121-388 (Billing & General Enquiry)	sdnet@wtthk.com.hk
For enquiry on Connectivity Guide	2840-3351	bsssupport@hkex.com.hk

Appendices

Appendix A – SDNet/2 Accredited Vendors Information

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 (HKT)

- Hutchison Global Communications Limited (HGC)

- WTT HK Limited (WTT)

For details of SDNet/2 circuit price information/ technical specification/ service level, please refer to http://www.hkex.com.hk/eng/market/sec_tradinfra/sdnet2.htm.

For the diagram of SDNet/2 network equipments, space requirements and power supplies, please refer to "SDNet/2 Installation Guidelines" http://www.hkex.com.hk/eng/market/sec_tradinfra/sdnet2.htm.

Appendix B – OCG Server Connectivity Information

OCG Primary Site:

OCG Binary Order Flow Service Lookup Server IP Range	10.1.93.11 – 10.1.93.51
OCG Binary Order Flow Service Lookup Server Port Range	50001 - 50100
OCG Binary & FIX Order Flow Server IP Range	10.1.93.11 – 10.1.93.51
OCG Binary & FIX Order Flow Server Port Range	50001 - 50100
OCG Binary Drop Copy Service Lookup Server IP Range	10.1.93.11 – 10.1.93.51
OCG Binary Drop Copy Service Lookup Server Port Range	50001 - 50100
OCG Binary & FIX Drop Copy Gateway Server IP Range	10.1.93.11 – 10.1.93.51
OCG Binary & FIX Drop Copy Gateway Server Port Range	50001 - 50100

OCG Backup Site:

OCG Binary Order Flow Service Lookup Server IP Range	10.2.93.11 – 10.2.93.51
OCG Binary Order Flow Service Lookup Server Port Range	50001 - 50100
OCG Binary & FIX Order Flow Server IP Range	10.2.93.11 – 10.2.93.51
OCG Binary & FIX Order Flow Server Port Range	50001 - 50100
OCG Binary Drop Copy Service Lookup Server IP Range	10.2.93.11 – 10.2.93.51
OCG Binary Drop Copy Service Lookup Server Port Range	50001 - 50100
OCG Binary & FIX Drop Copy Gateway Server IP Range	10.2.93.11 – 10.2.93.51
OCG Binary & FIX Drop Copy Gateway Server Port Range	50001 - 50100

OCG End-to-End Test Site (for OTP-C Connection):

OCG Binary Order Flow Service Lookup Server IP Range	10.1.93.201 – 10.1.93.220
OCG Binary Order Flow Service Lookup Server Port Range	50001 – 50100
OCG Binary & FIX Order Flow Server IP Range	10.1.93.201 – 10.1.93.220
OCG Binary & FIX Order Flow Server Port Range	50001 – 50100
OCG Binary Drop Copy Service Lookup Server IP Range	10.1.93.201 – 10.1.93.220
OCG Binary Drop Copy Service Lookup Server Port Range	50001 – 50100
OCG Binary & FIX Drop Copy Gateway Server IP Range	10.1.93.201 – 10.1.93.220
OCG Binary & FIX Drop Copy Gateway Server Port Range	50001 - 50100

Note:

The OCG IP address and port ranges provided in the table above are reserved for the client connection of the OCG servers. Actual OCG IP address and port number will be provided to the EPs upon enrolment of the OCG service in the production environment or the end-to-end test environment.

Appendix C – OMD Connectivity Information for OTP-C End-to-End Test

Please refer the "OMD Connectivity Guide for Securities Market and Index Datafeed Products" for the OMD connectivity information for OTP-C End-to-End test in the end-to-end test environment. (http://www.hkex.com.hk/Services/Market-Data-Services/Infrastructure/HKEX-Orion-Market-Data-Platform-Securities-Market-OMD-C?sc_lang=en)