

## HKEx Hosting Services: Frequently Asked Questions

### Part I (IT related)

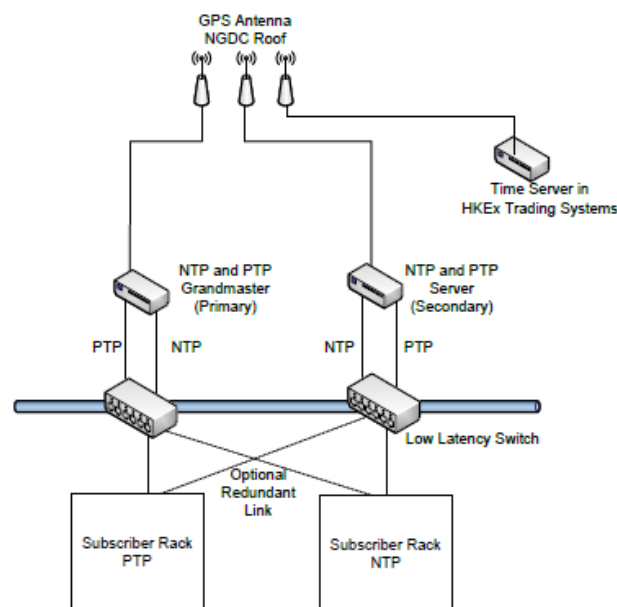
1. What is the Disaster Recovery strategy of the Hosting Data Centre?

Please refer to “Section 2.7 – Disaster Recovery (DR) Connectivity” of “Information Package on HKEx Hosting Services” at:

<http://www.hkex.com.hk/eng/prod/hosting/hostingservices/Documents/Hosting%20Services%20Information%20Package.pdf>

2. What is the make and model of the timing server of the Hosting Services timing service?  
Is the timing service provided by Hosting Services synchronize to the HKEx trading system?

The Hosting Services timing server is of Symmetricom S300. The timing service provided by Hosting Services is not synchronized to the HKEx trading system. However, timing server of HKEx Trading Systems network will be installed in HKEx Enterprise Data Centre which is in the same building and the GPS antenna will be mounted just next to the Hosting Services GPS antennas in the roof top. Practically, the two timings should be the same.



3. What protocol does PTP service support? Do you support native GPS signal?

The PTP service is according to IEEE 1588 standard. It only supports multicast protocol. Native GPS signal is not supported.

4. Can the existing OG be relocated to the Hosting Data Centre? Or must be replaced by hosting OG?

The existing OG can be relocated to the Hosting Data Centre technically. However, it can only be connected to HKEx AMS system via the SDNet. If the subscriber wishes to enjoy the low latency in-house HSN network service, hosting OG is required.

Besides, the secure “Smart card” operation will also hinder the use of conventional OG in hosting DC practically.

5. What are the major differences between conventional OG and hosting OG? Hardware? Software? Administration and maintenance?

Please refer to the Annex [1] of “Information Package on HKEx Hosting Services” at: <http://www.hkex.com.hk/eng/prod/hosting/hostingservices/Documents/Hosting%20Services%20Information%20Package.pdf>

For hosting OG, Exchange Participant is responsible for procurement and installation as well as for maintenance service which is different from the conventional OG. HKEx owns the administrative right of the hosting OG.

6. What is the general provision lead time of a hosting OG?

Subscribers are responsible for the procurement and installation of hardware, software packages and network for their hosting OG. Therefore, subscribers should check with their vendors on the respective hardware and software lead time.

Should the hosting OG connected to new broker supplied system (BSS), subscribers are required to contact Trading Division of HKEx to arrange the OG simulator test and end-to-end test. The duration of testing will depend on the readiness of BSS. For hosting OG connected to new BSS with positive BSS testing result or for hosting OG

connected to an existing BSS, HKEx will schedule the subscribers with their installed hosting OG to participate in the next available weekend market rehearsal which is usually held once per month.

Subject to the submission of (i) positive feedback of market rehearsal, (ii) signed BSS Declaration and (iii) signed Standard Terms and Conditions for hosting OG, subscribers can rollout their hosting OG with at least 3 trading days advance notice to HKEx.

For enquiry, please contact HKEx – Participant General Enquiry Hotline at 2840-3626

7. Does the new hosting OG supports AMD hardware platform?

The hosting OG servers can be built with an Intel or AMD CPU which has a higher CPU performance figures than the minimum CPU requirement stated in the specification in Annex [1] of “Information Package on HKEx Hosting Service” [i.e. One Intel<sup>®</sup> Xeon E5506 CPU or more powerful model (Quad-core CPU with at least 2.13 GHz clock speed and 4 MB cache)]. The selected hosting OG server models must be certified for Microsoft Windows Server 2008 R2 Standard Edition or Microsoft Windows Server 2008 R2 Enterprise Edition.

8. How much bandwidth each hosting OG consumes? NG consumes? etc.?

The bandwidth consumption in HSN will be as below:

Each OG Server : 9Mbps multicast and 1Mbps unicast

Each MDS client : 10Mbps unicast

Each NG Server : 7Mbps unicast (HKATS will be available via HSN Q2 2013)

Each PRS Server : 5Mbps unicast (HKATS will be available via HSN Q2 2013)

Each PRS+ Server : 7Mbps unicast (HKATS will be available via HSN Q2 2013)

9. Can we use the new hosting OG in our office environment?

The hosting OG can only be used in Hosting DC. It cannot be used in normal office environment due to security and authentication reasons.

10. Would you provide the sequence and timeline of HKATS/DCASS migration to SDNET/2 and to the NGDC? from what I gathered so far both are Q2 2013.?

Yes, the current schedule for HKATS/DCASS relocation to NGDC and HKATS/DCASS migration to SDNET/2 are both in Q2 2013.

11. We notice that there are various high bandwidth connections (1G, 10G) in the hosting HSN network as compare to SDNet. Is there any rationale behind? And any additional functions/values?

The high bandwidth connections allow subscriber to consolidate/aggregate existing multiple connections into one single port. That will reduce their overall connectivity cost and simplify the operation and maintenance effort. Besides, the high bandwidth HSN ports also minimize serialization delay.

12. Can I subscribe one single HSN port connection to access different trading (AMS, HKATS) and market data services (MDS, PRS, PRS+)? Or I have to subscribe multiple dedicated ports for different services?

Yes, subscriber can connect to HKEx trading systems including AMS/3.8 and HKATS and market data systems for securities and derivatives markets (e.g. MDS/3.8 and PRS) via one HSN connection (one active port + one standby port).

13. What is the latency in the HSN? Any SLA guarantee?

The practical latency (round trip) in HSN is about 50μs from the subscriber patch panel to the HKEx SDNET backbone network. There is no SLA guarantee.

14. Under what speed the HSN latency figure is measured? And where are the demarcation points?

The HSN latency (round trip) is measured using 1Gbps port. It is measured from the subscriber patch panel in the rack to the interface boundary of SDNet 2.0 Backbone.

15. For the HSN 100M, 1G and 10G port connections, what are the maximum usable throughputs respectively?

The maximum usable throughput in HSN is same as the subscribed physical port speed. However, each application, be it AMS, MDS or HKATS, will have its own data throughput

rate control (for example, AMS/3.8 transaction will be determined by the throttle assignment). So the total data throughput may not go up to the physical port speed in practical.

16. If we subscribe the hosting services and relocate all the systems into the Hosting DC in Q4 2012, can we access all the trading, market data and clearing services via HSN in Day 1? If not, what will be the arrangement? If SDNet is still required, do we need to upgrade to SDNet2.0?

In Day 1, subscriber can only access the securities trading and market data systems (AMS/3.8 and MDS/3.8) via in-house HSN. To access the derivatives trading and market data systems (HKATS, PRS and PRS+), SDNet is still required until Q2 2013.

The migration to SDNet/2 will be completed in 3 phases. Phase 1 migration will involve MDS and AMS/3.8 circuits and are planned to complete in Q2 2012 and Q3 2012 respectively. Phase 2 and 3 migration will involve HKATS/DCASS/PRS and CCASS/3 which will be scheduled to complete in Q2 2013 and Q4 2013 respectively.

As Phase 1 migration will only involve AMS/3.8 circuits, EPs should not apply for SDNet/2 circuits for HKATS/DCASS/PRS/CCASS at this moment. HKEx will inform EPs the actual implementation schedule of Phase 2 and Phase 3 in due course.

17. Can different EPs share one HSN port?

No, different EPs cannot share HSN port.

18. On the ESN, will EP need multiple ports for different services or just one port will be enough?

Both scenarios are possible. It depends on the type of service that other ecosystem participants provide. Technically, the ESN is based on Layer 3 IP routing. Participant A can connect to all other participants via one single port connection.

19. Is the ESN a Layer 2 or Layer 3 service?

The ESN is Layer 3 IP based service.

20. It looks both ESN and XCN are for subscriber to subscriber connection. What is the difference/differentiation?

The ESN composes of a switching/routing platform. In general, it is deemed as a one-to-many connection.

The XCN is a pure physical cable/fiber connection without any active components. It is deemed as a one-to-one (point-to-point) connection.

21. If I have a rack hosted in the Hosting DC, how can I connect it back to my office in Central? Can I subscribe SDNet for this connection?

No, you cannot use SDNet for backhauling to your office network. SDNet is only applicable for accessing trading, market data and clearing services as provided by HKEx. You may contact Network Service Provider for local loop circuit (or similar service) in connecting back to your office in Central.

(Remarks: Ten Network Service Providers - BT, China Telecom, HGC, IPC, KVH, PACNET, PCCW Global, TNS, Verizon and Wharf T&T, have already signed up the founding member program.

## **Part II (General )**

22. If an EP subscribed a half rack configuration, does it mean he will need to share the rack with another EP?

Yes, logically two “half-rack” EPs will occupy one same rack. However, physically, the upper half and lower half are separate compartments with individual door and lock.

23. Derivatives Market will go-live in Q2 2013 tentatively, should the Derivatives EP submit the Expression of Interest now?

As there is a 6 months gap between the migration of Securities Trading and Derivatives market production systems to HKEx Enterprise Data Centre, Derivatives EPs will be given two options in service provisioning dates provided the Hosting Services

Subscriber Agreement is signed and a three months deposit paid:

- Immediate provisioning and billing of the allocated rack
- Provisioning and billing deferred to a mutually agreed date which is in-line with the HKATS migration completion date

24. What will happen if we upgrade our existing half rack to full rack during the 2-year contract term? Will it be cancelled or will we have to pay out the remaining period on the contract?

In this upgrade scenario, the existing half rack will be cancelled. The subscriber does not need to pay for the remaining balance of contract period.

In fact, the 'half-rack' will be treated as termination, and the 'full rack' will start immediately after with a new One Time Fee (OTF) and a new Monthly Recurrent Fee (MRF).

25. What is the hosting services application procedure/process? Is there a contract/agreement sample?

Please refer to "Section 6 – Service application procedures" of "Information Package on HKEx Hosting Service" at:

<http://www.hkex.com.hk/eng/prod/hosting/hostingservices/Documents/Hosting%20Services%20Information%20Package.pdf>

The Hosting Services Subscription Agreement sample will be available by May 2012.

26. Is there equipment storage facility for subscriber use in the Hosting DC? And staging area? Any charges associated?

Yes, temporary storage and staging areas are available for subscriber use free of charge. Prior booking with HKEx Hosting team is required.

27. If I subscribe 4kVA rack in Day 1 and need to upgrade to 6kVA power some time later, what is the upgrade procedure? And is there any service interruption during upgrade?

No, there will be no service interruption during the upgrade. In fact, every rack in the Hosting DC can support up to 6kVA in Day 1. The upgrade is only a commercial process in signing a revised order form for billing record.

28. Will there be parking facilities in your new data center? If so, will there be parking charges for registered visitors (i.e. customer of the data center)?

Due to security reasons, there is no parking facility for visitors in HKEx DC campus. Customer/subscriber may use the public parking facilities in the nearby areas.

29. Will there be reasonable cell/mobile phone coverage inside the data center (rack space) area?

There should be reasonable cell/mobile phone coverage in the data center. HKEx don't interfere/jammed the mobile phone signal.

30. Will there be wired or wireless Internet access coverage inside the data center area?

It is planned to provide complimentary Wi-Fi service (w/security token) for customer to access Internet inside the data center area.

31. Are we able to access the data center during Typhoon signal no. 8 and Black Rainstorm signal if we have pre-registered the site visit?

Yes, the data center access is 24x7x365 under all weather conditions.

32. On the Remote Hand service, other than basic power reset, status/alarm checking and visual inspection, do you offer any other advance and next level of service, such as: network monitoring, application set up, OS patching, etc.?

No, the Remote Hand service is limited to the basic level only. For next level of service, the subscriber is encouraged to contact other managed service provider presence in the hosting ecosystem.

33. What is the ordering process of hosting OG?

Subscribers who are interested in acquiring hosting OG for connection to AMS/3.8 via

HSN need to arrange the procurement of: hardware and software packages for their hosting OG, and the installation with one of the appointed service vendors (to be advised in May/Jun 2012) for installation directly. At the same time, subscribers need to inform Trading Division of HKEx separately on throttle assignment of hosting OG.

34. What is the maximum number of HSN port that one hosting rack can support?

Theoretically, there is no limitation on the number of HSN port in one subscriber rack. HKEx will add more patching panel if required. The practical limitations are more on the space and power constraint of equipment hosting in one rack.

35. How do you ensure the fairness on latency among subscribers as some racks in the data hall are physically closer to the network and trading systems?

HKEx adopts an 'Equal Distance' policy to ensure the same practical latency be applied to different subscribers independent of their locations in data hall. Moreover, this policy is not only applicable to Day 1 subscribers, but also applicable to future subscribers in the expansion data halls.

36. What is XCN?

XCN is a point-to-point (rack to rack) physical cable (UTP) or fiber connection without any active components in between. It is generally referred as "cross-connect".

37. Do you support 3 phase power in the Hosting DC? What are the options? What is the charge?

Yes, 3 phase 380V AC power is also supported. Only 32A option will be offered. The charging scheme will be provided later.

38. Is there any SLA on power availability? SLA on environmental condition? SLA on remote hand response time? Any others?

HKEx warrants 99.999% availability for Power.

39. Can we supply our own rack/cabinet? If yes, any guidelines?

As the data center site is deployed with pre-fabricated cold aisle containment, subscriber has to use the standard rack provided by HKEx. The rack dimension is:

Full rack - 800mm(w) x 1175mm (1100mm effective) (d) x 47U (h)

Half rack - 800mm(w) x 1175mm (1100mm effective) (d) x 22U (h)

40. Can we supply our own PDU (power strip)? If yes, any guidelines?

HKEx will provide standard PDU (power strip) in the equipment rack for subscriber use. Subscriber is not allowed to install his own PDU (power strip).

41. Does HKEx Hosting offer any external network connectivity service?

No, HKEx Hosting does not offer any external network connectivity service. However, HKEx Hosting DC is a carrier neutral data center. Subscriber can contact their preferred Network Service Provider for connectivity service as they wish.

(Remarks: Ten Network Service Providers - BT, China Telecom, HGC, IPC, KVH, PACNET, PCCW Global, TNS, Verizon and Wharf T&T, have already signed up the founding member program.)

42. How do I connect to Telco, via HSN, ESN or XCN?

The Telco carriers' racks are mainly located in Telco room. The straight forward way to connect from subscriber rack to Telco rack is via XCN (cross-connect). Depending on the type of service, it may be possible to connect via the ESN. Please contact the respective Telco for details.

HSN is strictly used for HKEx trading, market data and clearing related services.