

# **Update on Hong Kong Open eXchange (HKOX)**

**APAN 45 - 28 Mar 2018**

## HKOX Background

- ▶ HKOX is set up and managed by Joint Universities Computer Centre (JUCC)
- ▶ JUCC is a consortium of computing and IT services centres of all the government-funded universities in Hong Kong founded in 1970
- ▶ Strategic mission of JUCC:
  - Support Academic and Research Excellence
  - Provide Advanced Research and Education Networks in Hong Kong
  - Develop Hong Kong as an Internet Hub for Leading-edge Research in the Region

## HKOX Objectives

- ▶ Collate stakeholders (R&E network operators, universities and researchers, carriers, government) to a community and strengthen HK's position as a R&E regional hub in the Asia Pacific region
- ▶ Enable HKOX community to participate in high-impact world wide research and education activities that are data-intensive/bandwidth intensive (e.g. HK faculty members participating in particle physics, genomic research, meteorology, telemedicine, etc.)
- ▶ Act as test bed for new Internet protocols and architectures before deployment within the Public Internet.
- ▶ Enable non-university entities to enjoy more cost effective sharing of expensive high-bandwidth connections

## HKOX Partners

- ▶ Research, university, government network are welcomed
- ▶ ISP, commercial network, content delivery network (CDN), DNS root can be considered only if appropriate and necessary

## HKOX Services

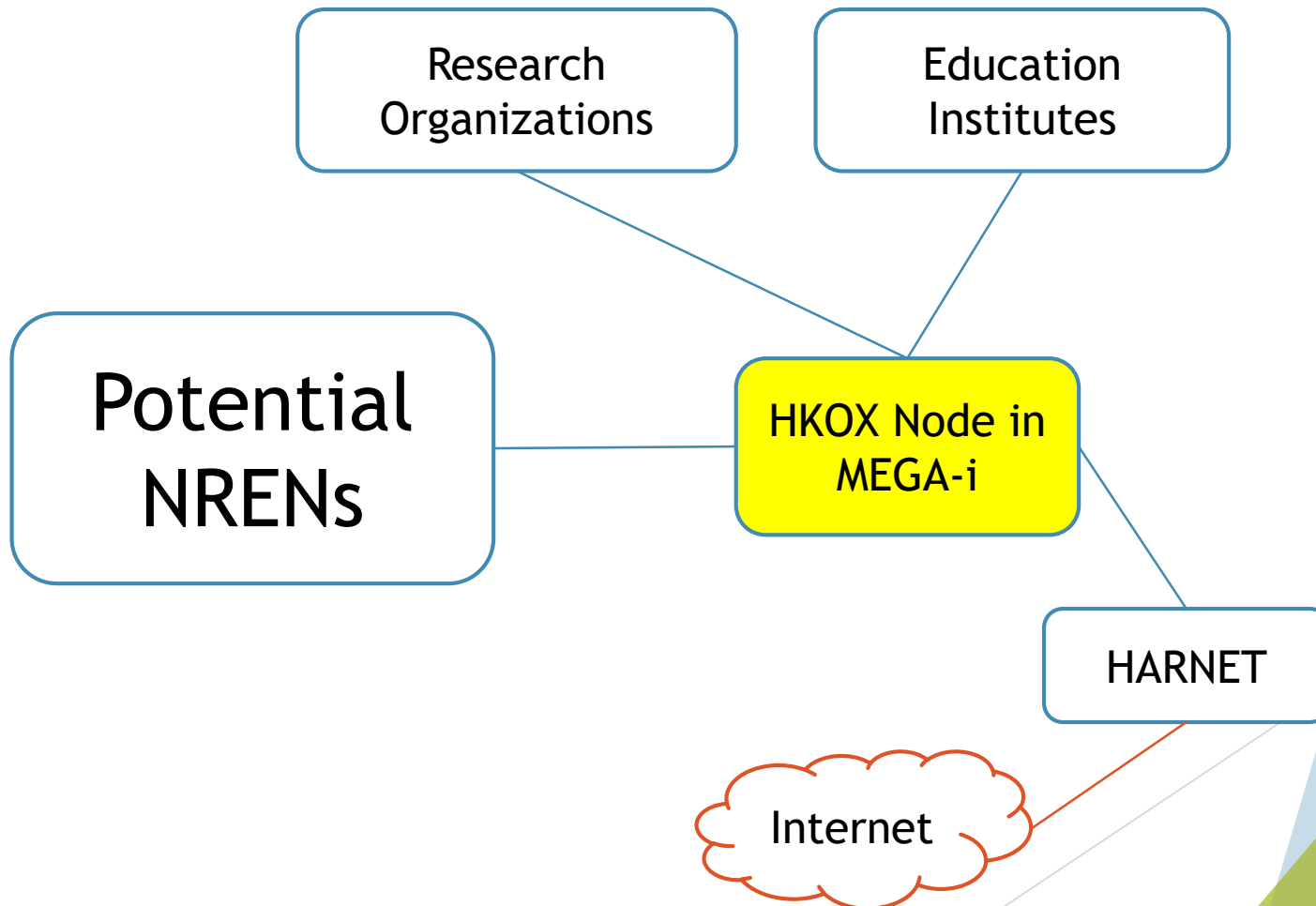
HKOX aims to facilitate policy-free exchange of traffic among any connected R&E networks, R&E organizations, and cloud service providers. HKOX targets to be GNA-compliant, and supports the following services using a non-blocking switching infrastructure residing in a carrier-neutral facility:

- ▶ Peering Service:
  - Layer 2 (initially) or Layer 3 (under planning)
  - Support Private Peering (or Bilateral Peering) with respective parties reaching peering agreement by themselves
  - Provide Route Servers (under planning) to provide routing information to facilitate and streamline the implementation of Multilateral Peering arrangements, and to lower the barrier of entry for new peering participants
  
- ▶ Support IPv4 and IPv6 traffic natively

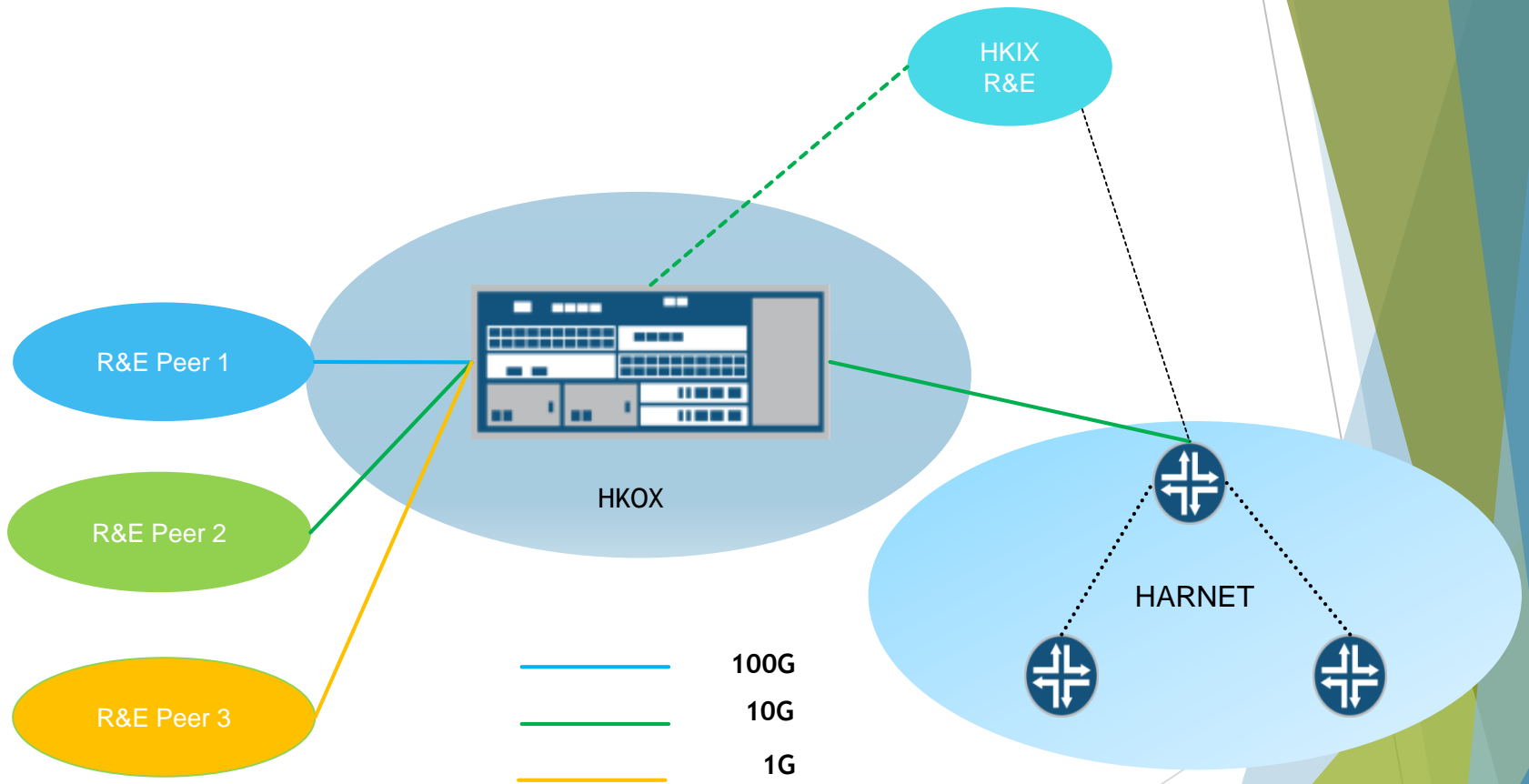
## HKOX Services (Continue)

- ▶ Support Q-in-Q (802.1Q Tunneling), Port Trunking, and Jumbo Frames of up to at least 9,000 bytes of Ethernet payload
- ▶ Support Point-to-Point and also Multipoint Layer 2 Transport Service
- ▶ Support Static (initially) and Dynamic VLAN provisioning (under planning)
- ▶ Support setting up of a dedicated point-to-point VLAN between two parties for private communication
- ▶ Network Performance Tools:
  - MRTG - provide network usage statistics of the open exchange
  - perfSONAR - enable network performance measurement for monitoring and testing network paths across network domains

# HKOX Planned Connectivity

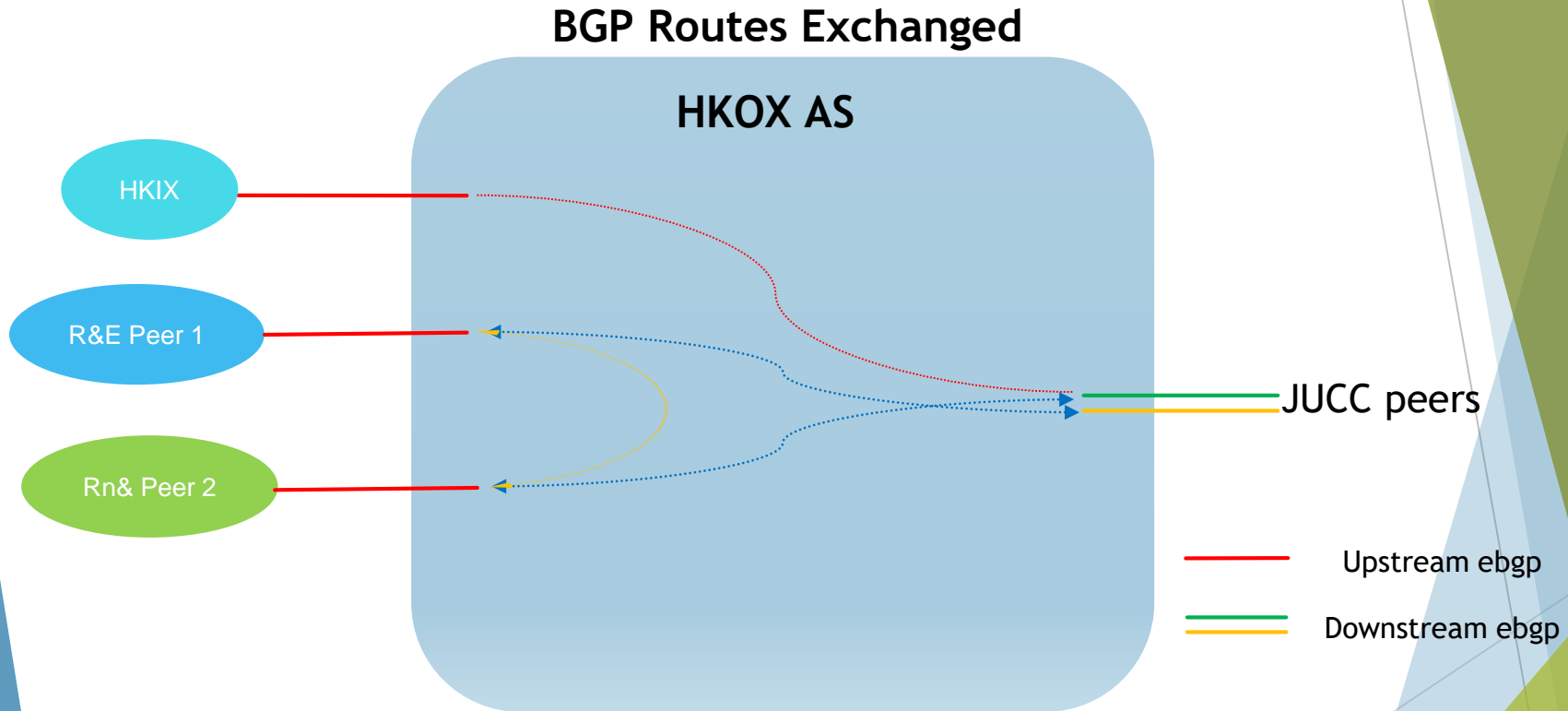


# High Level Topology





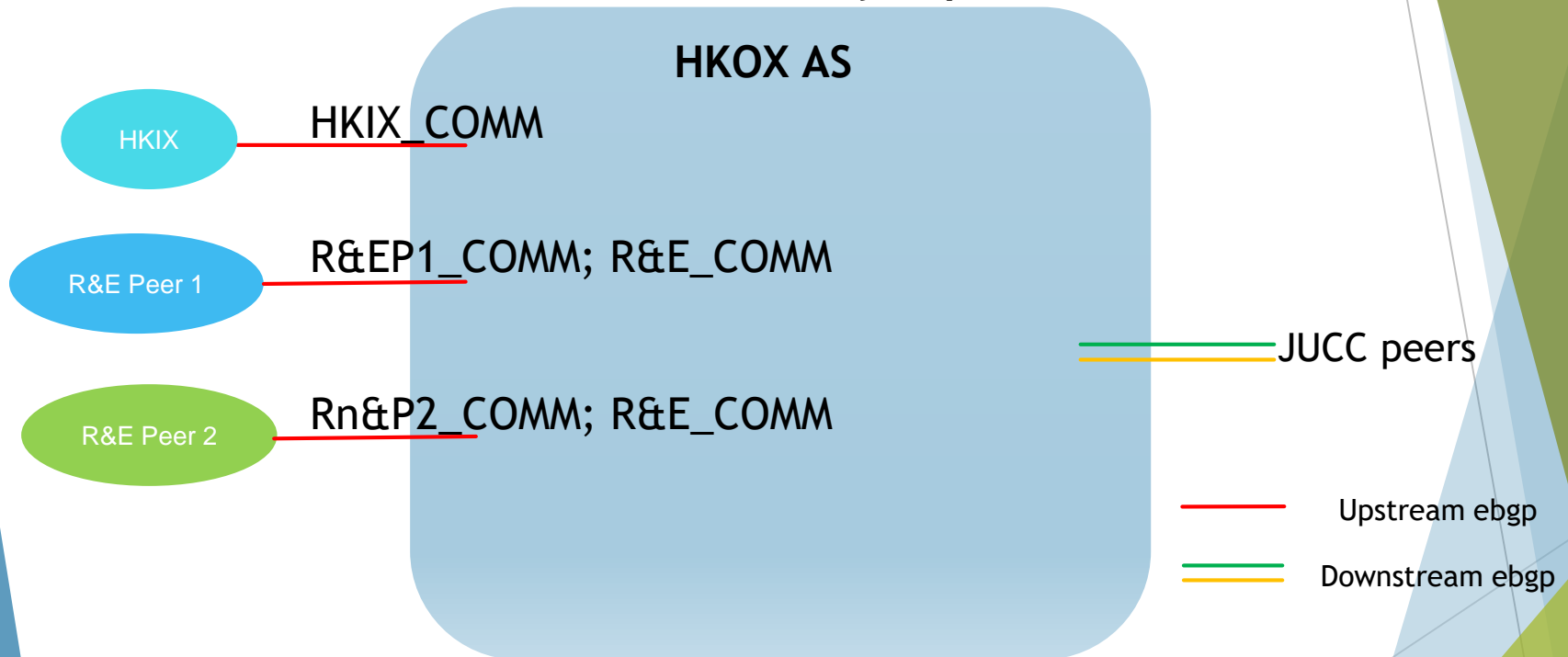
## Solution Overview Routing Exchange



Route exchanges will be controlled by BGP community

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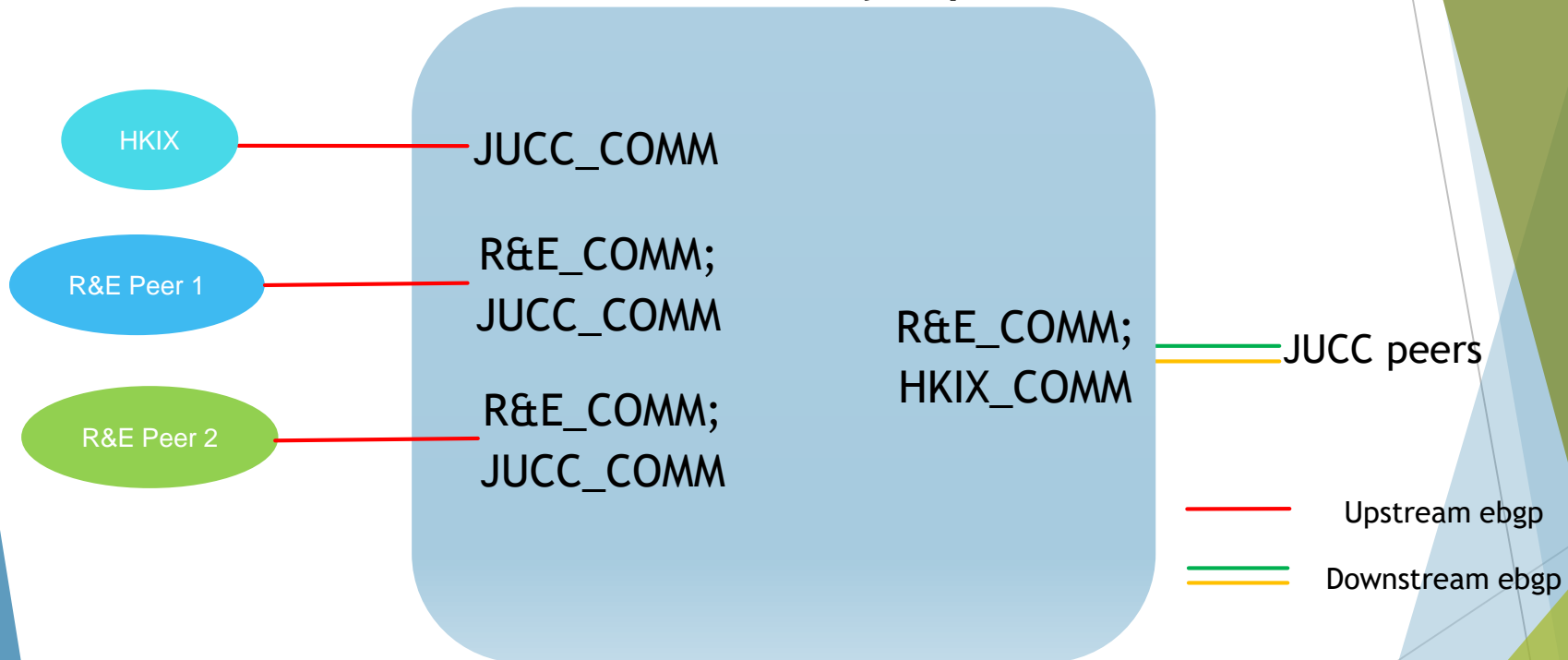
## BGP Community Import



Above BGP communities will be added while route received from remote ebgp peer

## Solution Overview Routing Exchange

### BGP Community Export



Routes with above BGP communities will be advertised to remote ebgp peer

## HKOX Equipment

- ▶ Comply with GNA specifications
- ▶ Juniper MX10003
- ▶ Support GE, 10GE, and 100GE ports
- ▶ Locate at MEGA-i 10/F
- ▶ Easy to cross connect to most of the NREN and commercial terminations already present in MEGA-i

# HKOX Equipment - Juniper MX10003



# Features Highlights of Juniper MX10003

- ▶ 4.8Tbps throughput
- ▶ Ultra high port density - supports up to 144 x 10GbE interfaces, 36 x 40GbE interfaces, or 24 x 100GbE interfaces in a single chassis
- ▶ Control plane redundancy and N+1 power supply module redundancy
- ▶ 2 Expansion Slots
- ▶ Power efficiency

# HKOX Progress Update

- ▶ Domain registered
  - ▶ HKOX.HK
- ▶ DNS and Email ready
- ▶ AS number: AS137207 & AS name: JUCC-AS-AP
- ▶ Setup Juniper MX10003 in MEGA-i by April 2018

## HKOX Planned Activities

- ▶ HKOX ready by 2<sup>nd</sup> Quarter 2018
- ▶ Arrange bilateral meetings with NREN partners
- ▶ Task Force Members will regularly update HKOX progress on upcoming Internet2 Global Summit, TNC18, and APAN46, etc. events



## HKOX Charging Scheme

- ▶ Port charge will be waived for at least two years

# Thank You

Web Site: [www.hkox.hk](http://www.hkox.hk)  
Contact: support@hkox.hk