



# **HKIX Updates and Latest Development**

Kenneth Chan

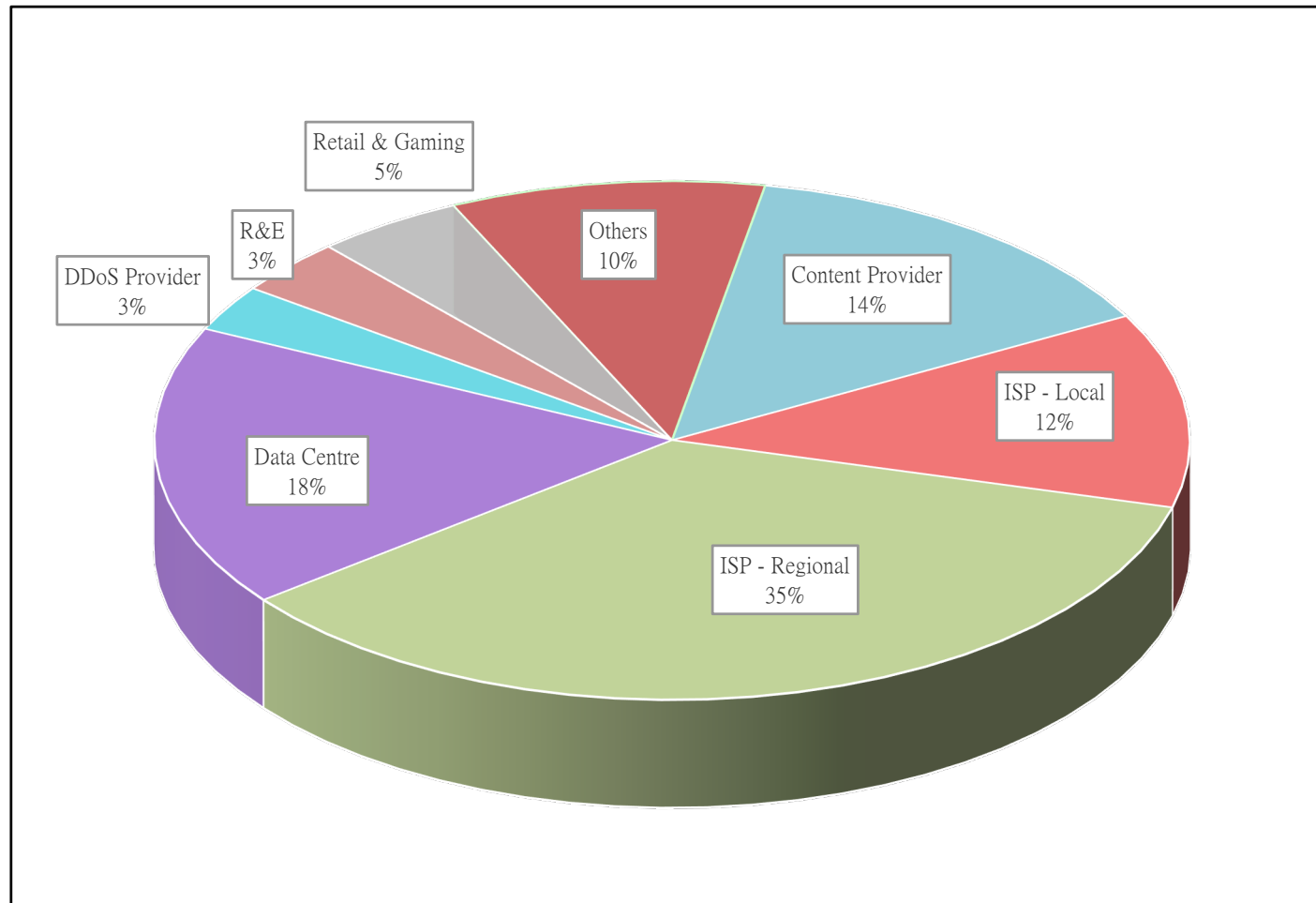
HKNOG 9.0

25 Sep 2020

# HKIX Today

- Supports both MLPA (Multilateral Peering) and BLPA (Bilateral Peering) over layer 2
- Supports IPv4/IPv6 dual-stack
- More and more non-HK participants
- 330+ different networks (autonomous systems) connected
- 560+ physical connections in total
  - 77 **100GE**, 340+ **10GE** & 150+ **GE**
- 1.75+Tbps (5-min) total traffic at peak
- Annual Traffic Growth **~30%**

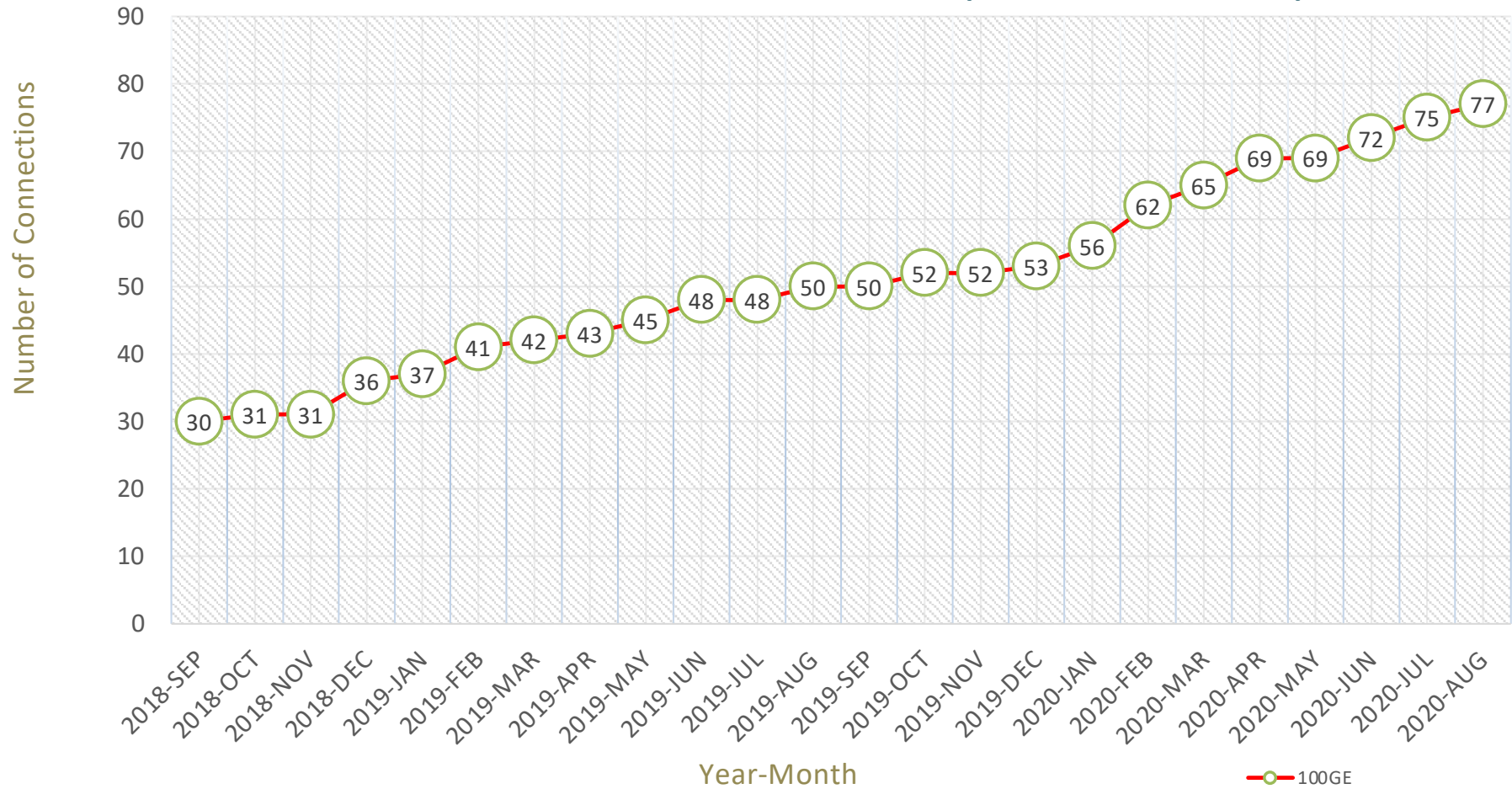
# Portfolio of Participants



# 100GE Connections at HKIX



Latest Numbers of 100G Ports Connected (2018 SEP - 2020 AUG)



# 100GE Participants @HKIX (1/3)



- Akamai
- Amazon
- ANSONNET
- AOFEI
- BGP Consultancy
- **BIGO**
- China Mobile HK
- China Mobile International
- CloudFlare
- **Continent 8**
- Facebook

# 100GE Participants @HKIX (2/3)



- Google
- HKBN
- Hurricane Electric
- HGC
- PCCW
- Level 3
- Limelight
- Microsoft
- Mytek
- Netflix
- PCCW Global

# 100GE Participants @HKIX (3/3)



- Taobao
- Telin
- Telstra
- Tencent
- TVB
- Udomain
- China Unicom HK
- Value
- XLC Global
- Yahoo

# HKIX's 100GE participants at a glance

<p><u>Content Provider</u></p> <p>BGP Network (M) Sdn Bhd</p>	<p><u>ISP Regional</u></p>	<p><u>ISP Local</u></p>	
<p><u>Retail &amp; Gaming</u></p>	<p><u>DDoS Provider</u></p>	<p><u>Data Centre</u></p>	<p><u>Others</u></p>

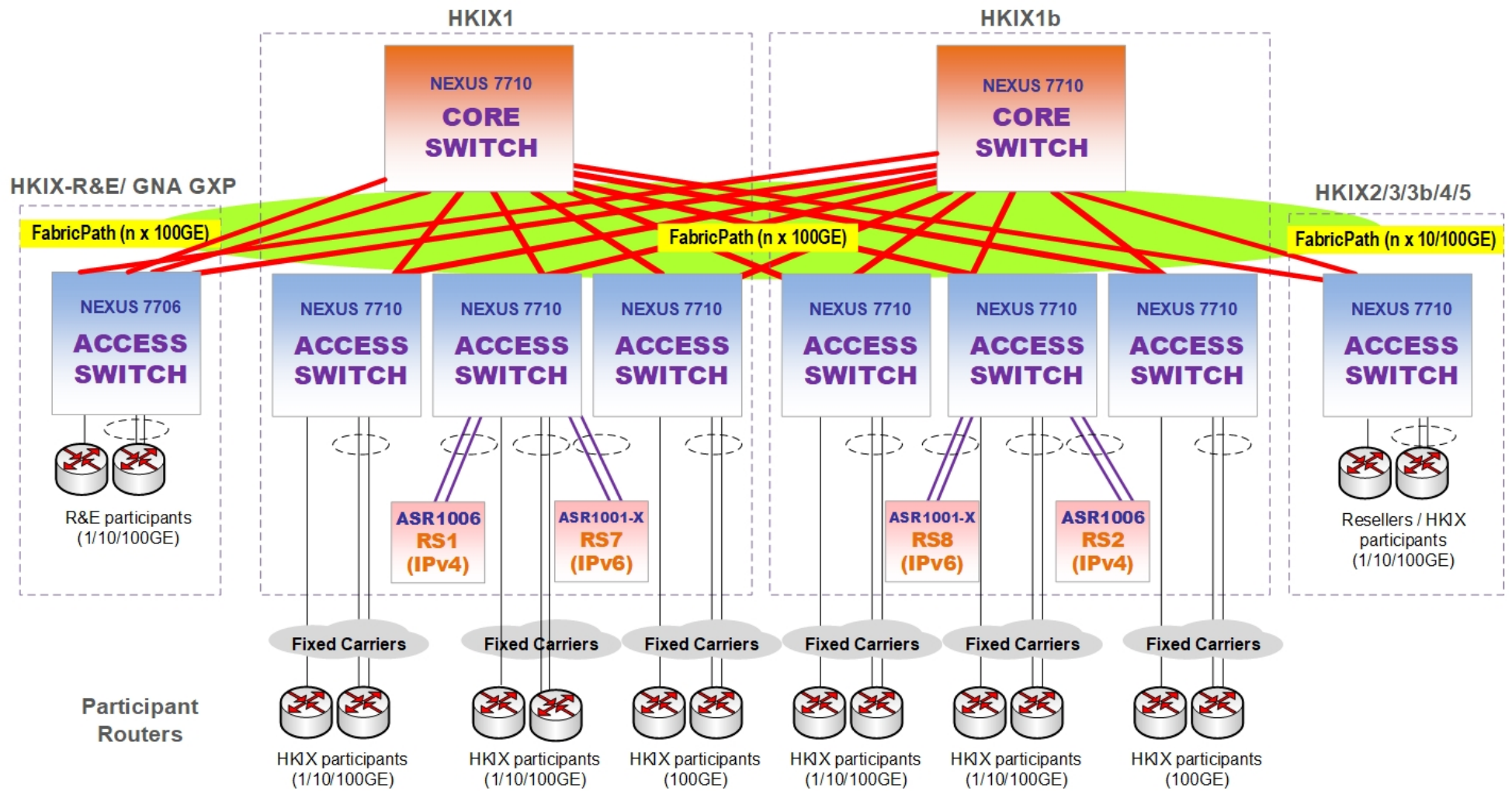


# What we have done in 2019-20



- New route servers (RS7 & RS8) for IPv6 peering
- New access switches dedicated for 100GE connections
- More 100G links added to the Fabric Path backbone
- New satellite site extension to MEGA-i
- Support of IRR filtering and decommission of AS filtering on HKIX route servers
- RPKI deployment at HKIX
- ISO27001 Certification
- New features in Customer Portal
- Speed test servers at HKIX for Speedtest.net

## HKIX Network Diagram (Jul 2020)



1. **HKIX1** and **HKIX1b** are the two core sites of HKIX at CUHK while **HKIX2/3/3b/4/5** are HKIX satellite sites outside of CUHK.
2. HKIX participants are encouraged to connect to multiple sites for site resilience.



# Filtering on HKIX Route Servers

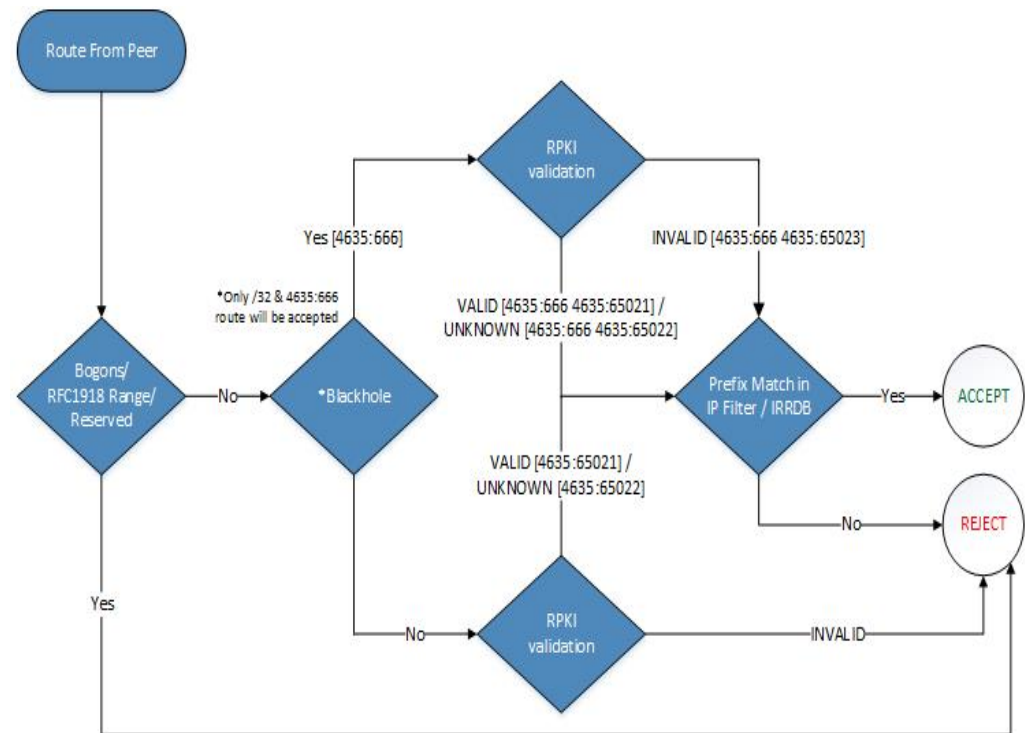
AS filter update on route servers has been ceased on 1-Jul-2020 and onwards. Please change to use **IRR filtering** if you would like to update the filters for BGP route announcement.

- **IRR filtering**
  - Applicable to general HKIX members
  - Use IP prefix list instead of IP address list
  - Automatically update from Internet Routing Registry database
  - Please keep your AS-SET updated on IRR database
- **IP address filtering**
  - Manual processes are involved (not recommended)
  - Participant needs to submit the change and wait for approval
  - Use IP address for filtering

# RPKI Deployment at HKIX

- Fully Implemented on HKIX route servers on Jun 21
- Check BGP routes with PRKI validators and drop invalids
- Accept and tag valid and unknown routes with 4635:65021 and 4635:65022 respectively
- Blackhole /32 route will be accepted

RPKI Validation	No. of Routes	Percent
RPKI Valid	100,497	25.7%
RPKI Not Found	289,070	73.9%
RPKI Invalid (Dropped)	1,776	0.45%
Total Routes Received	391,343	100.0%





# New features in Customer Portal (1)

## Technical Support:

The screenshot shows a web browser window at [portal.hkix.net](http://portal.hkix.net). The page features the HKIX logo and a navigation menu with items: Port Security, Statistics, Maintenance Window, Manage Account, Technical Support, Application Forms, and Links. The 'Technical Support' dropdown menu is open, listing: Fault Case Report, HKIX Looking Glass, Filter Update Request, Filter Update Ticket Query, and Filter Update Guidelines. A 'Welcome, TEST' message with a 'LOGOUT' link is visible in the top right. The main content area displays 'Welcome to Customer Portal'.

**HKIX** Hong Kong Internet eXchange

### HKIX Fault Case Report Form

Participant Type:

**Disclaimer**  
The personal data collected will be used by HKIX and the authorised personnel for processing captioned purposes only. All personal data you provided will not be disclosed to any third parties unless with your prior consent.



# New features in Customer Portal (2)

## Application Forms:

The screenshot shows a web browser window at [portal.hkix.net](http://portal.hkix.net). The page displays the HKIX logo and a navigation menu with the following items: Home, Port Security, Statistics, Maintenance Window, Manage Account, Technical Support, Application Forms, and Links. The 'Application Forms' dropdown menu is open, showing three options: Site Access Application Form, Site Access Authorization List Form, and Equipment Move-in/out Form. The user is logged in as 'TEST' and has a 'LOGOUT' link.

**HKIX Site Access Application Form**  
For any enquiries, please send email to [access@hkix.net](mailto:access@hkix.net)

**1** Application Information > **2** Site Access Time > **3** Site Access Purpose > **4** Authorized Representative > **5** Terms & Conditions > **6** Review Your Entry

**Name of Authorized Applicant \***

Only those authorized persons identified in writing by the Customer on the HKIX Data Centre Authorization List can make request to enter the HKIX Data Centre. Please visit HKIX Site Access Guidelines at <http://www.hkix.net/hkix/site-access.htm> for more information.

**Staff ID or first 3 digit of HKID/Passport \***

**E-mail Address \***

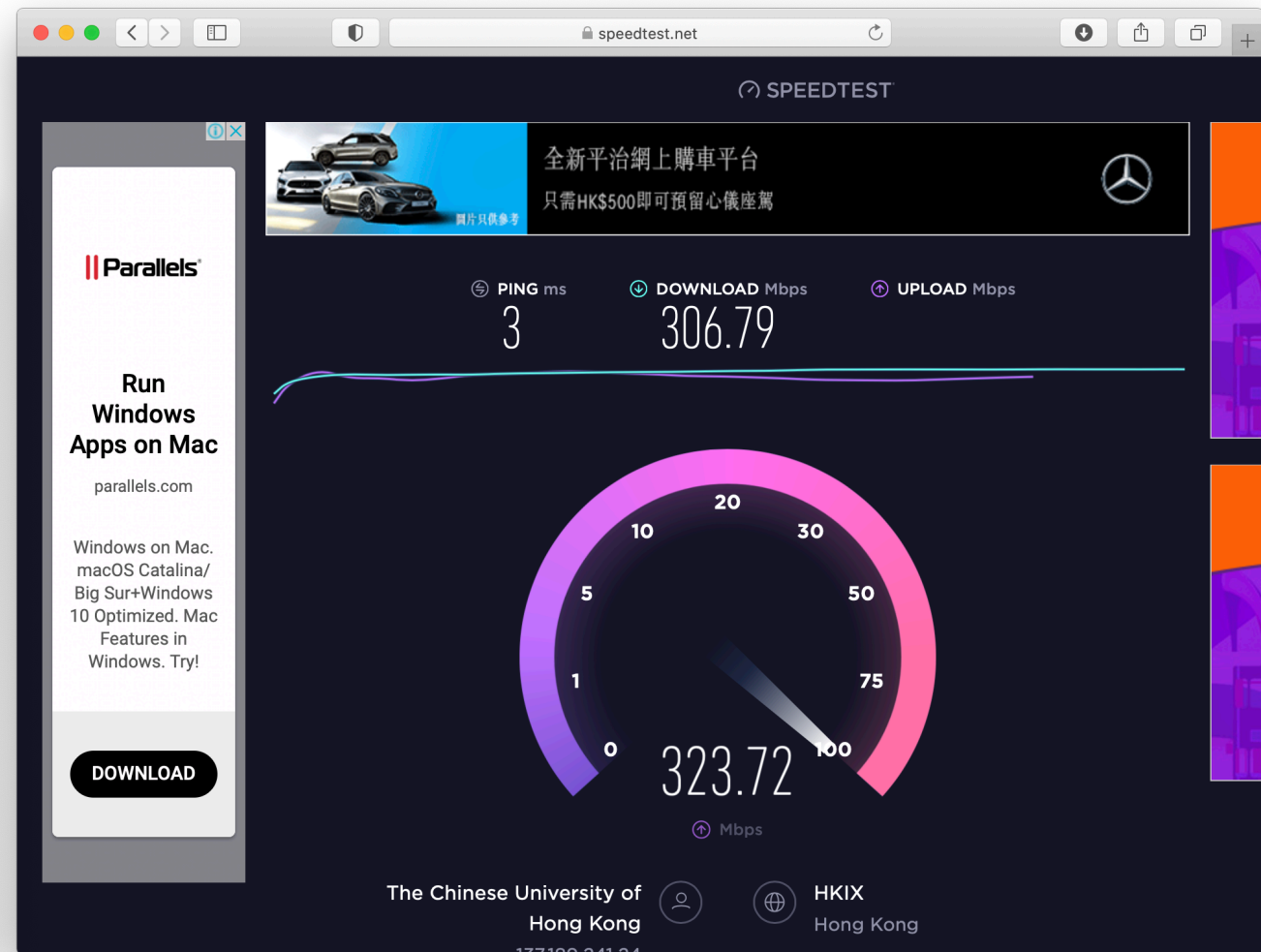
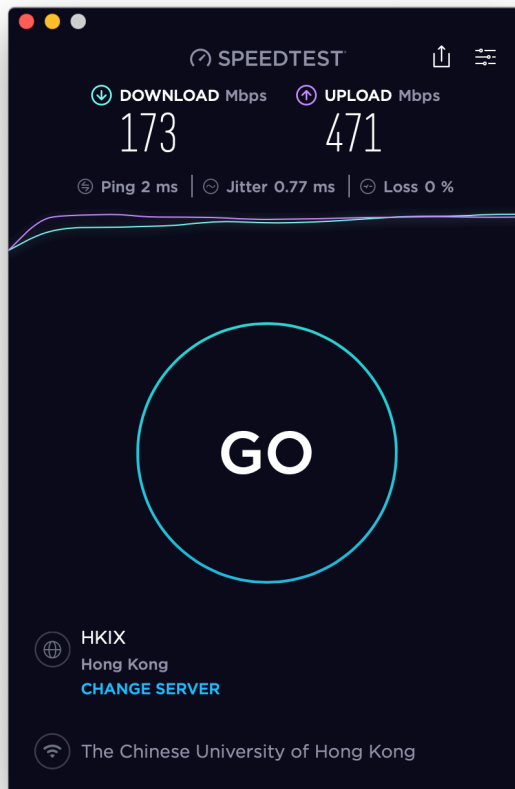
**Contact Phone Number \***

**Type of Applicant \***

FTNS Operator  HKIX Participant

# Speedtest Servers at HKIX

<https://www.speedtest.net/>





# HKIX Planned Works for 2020-21

HKIX Reseller  
Program (Phase 2)

New HKIX Core  
Site

RS1 and RS2 (IPv4)  
Route Servers  
upgrade

NTP servers for  
HKIX participants

Implement MANRS  
IXP Programme for  
routing security

Implement  
security operations  
center (SOC)



# MANRS IXP Programme

Mutually Agreed Norms for Routing Security (MANRS)

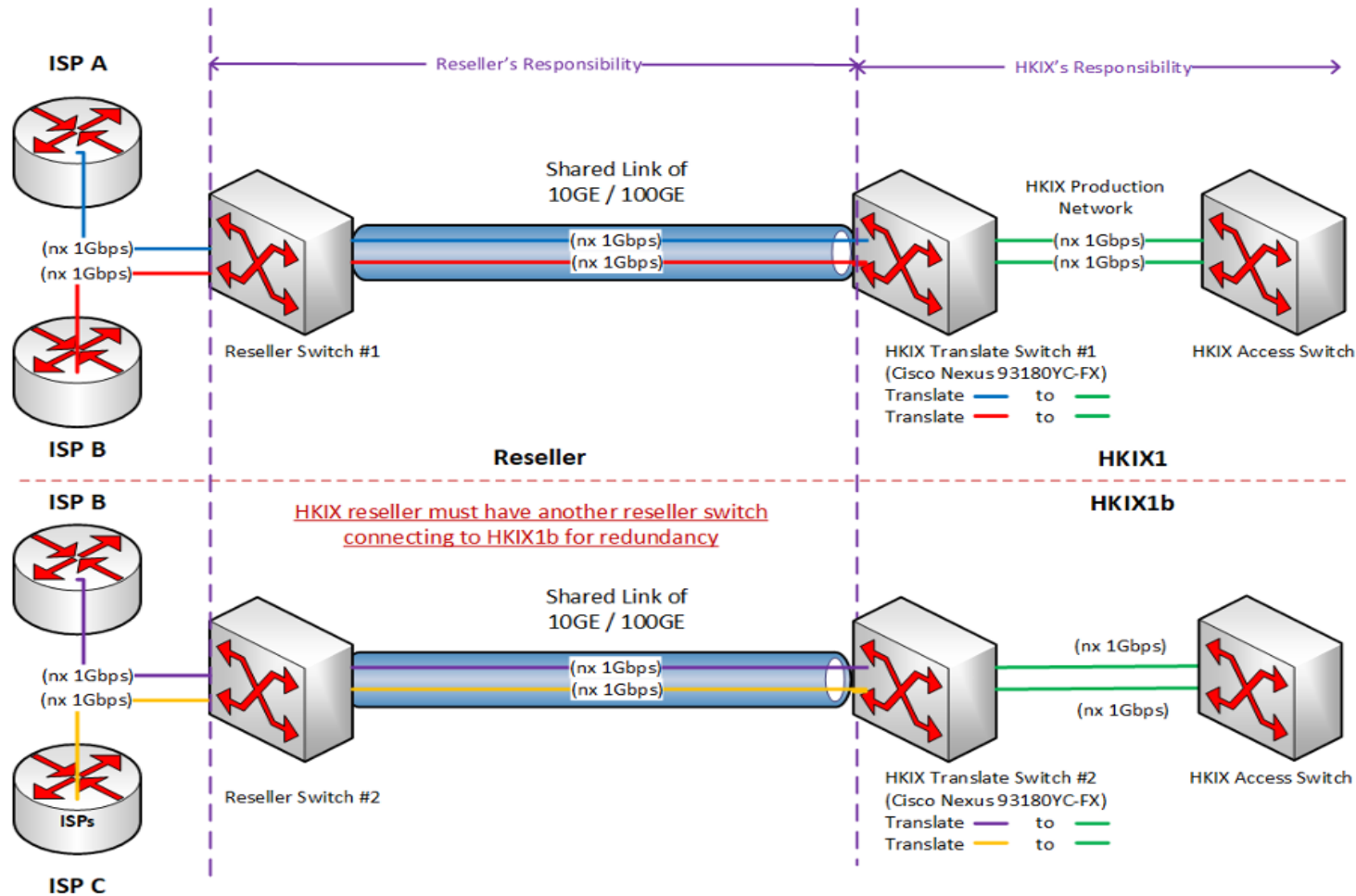
- Action 1: Prevent propagation of incorrect routing information
- Action 2: Promote MANRS to the IXP membership
- Action 3. Protect the peering platform
- Action 4. Facilitate global operational communication and coordination between network operators
- Action 5. Provide monitoring and debugging tools to the members



# HKIX Reseller Program

- Target oversea participants for peering
- Non-exclusive arrangement / resellers can be IXPs, Data Centers, local and regional ISPs
- Phase 1 launched in July 2019 for connecting to Satellite Sites only
- Phase 2 will be implemented in Q4 this year, for connecting all **HKIX Core Sites**
- Application will be opened on **28<sup>th</sup> September 2020**
- If you are interested be one of our resellers, please contact info[[@](mailto:info@hkix.net)]hkix.net.

# Reseller Network Topology Diagram

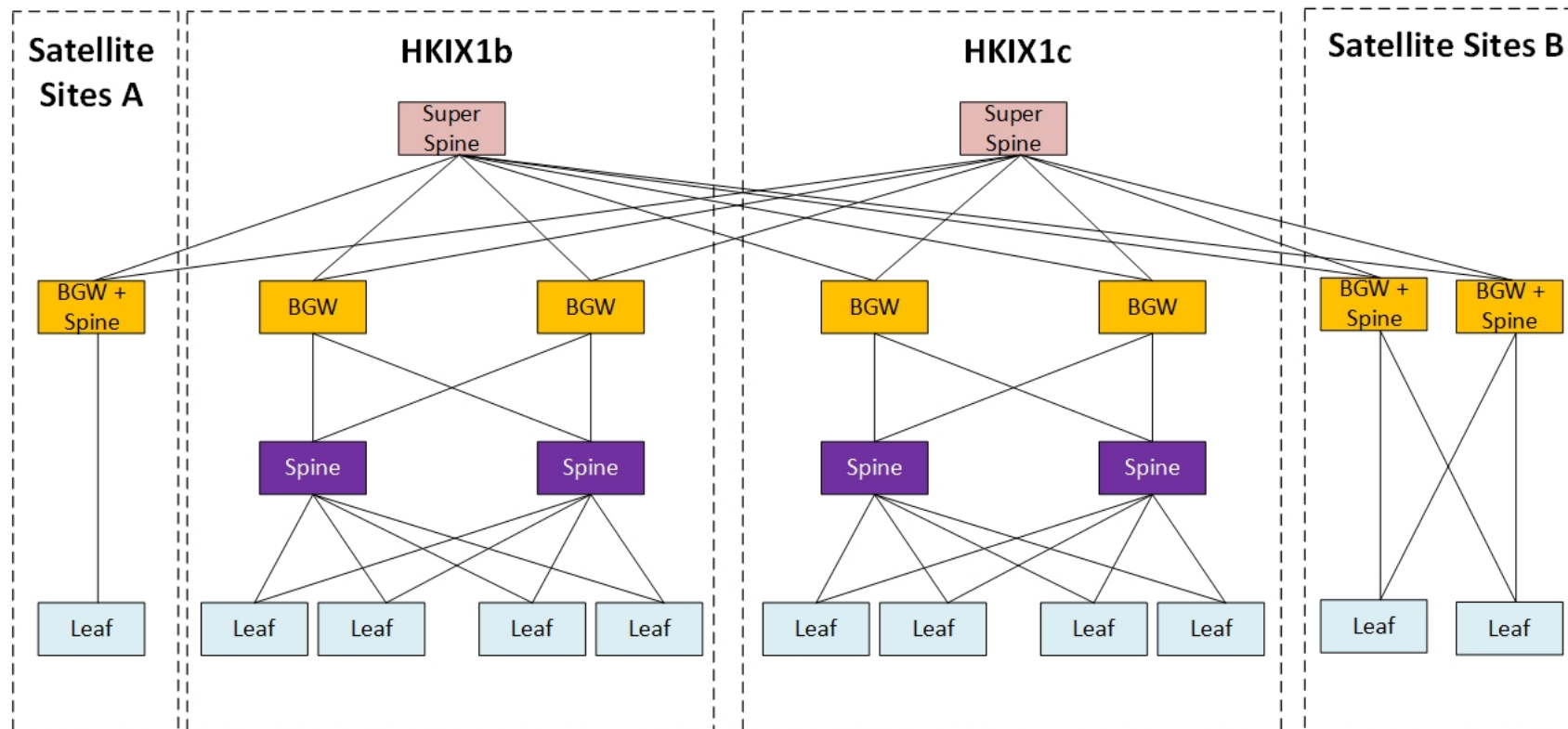


# HKIX New Core Site

- A new HKIX Core site will be established outside CUHK
- Target Q4 2020
- VXLAN EVPN Multi-Site technology
- Support 1/10/100/400 GE
- Super Spine, Border Gateway (BGW) and Local Spine and Leaf switches will be installed in Core Sites
- BGW/Spine and Leaf switches will be installed in Satellite Sites
- Inter-site links will be connected between Super Spine and BGW or BGW/Spine switches

# VXLAN EVPN Multi-Site Architecture

HKIX Next Generation Network Architecture





# Thank You!

For enquiries, please contact us at  
**info [at] hkix.net**