



# HKIX Updates at HKNOG 7.0

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*HKIX*

[www.hkix.net](http://www.hkix.net)

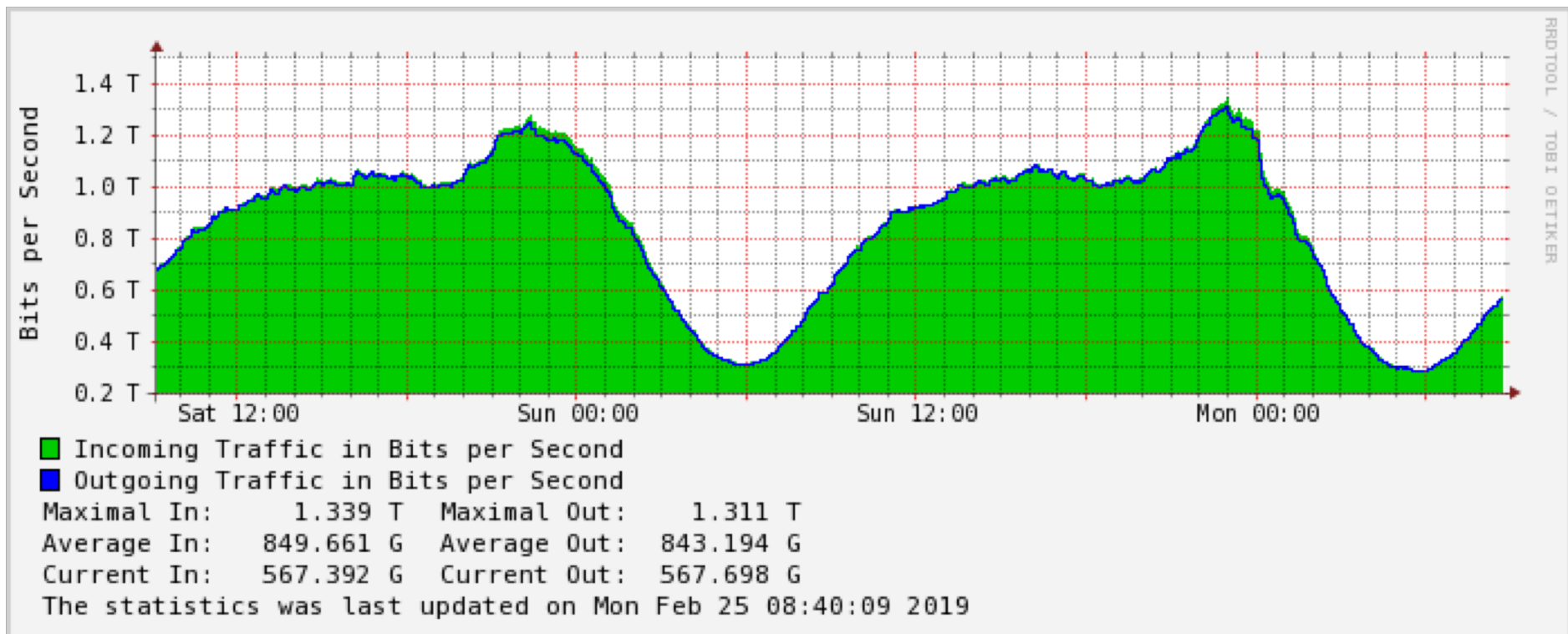
*1 Mar 2019*

# 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
- 300+ different networks (autonomous systems) connected
- 510+ physical connections in total
  - 41 **100GE**, 320+ **10GE** & 150+ **GE**
- 1.34+Tbps (5-min) total traffic at peak
- Annual Traffic Growth **~30%**

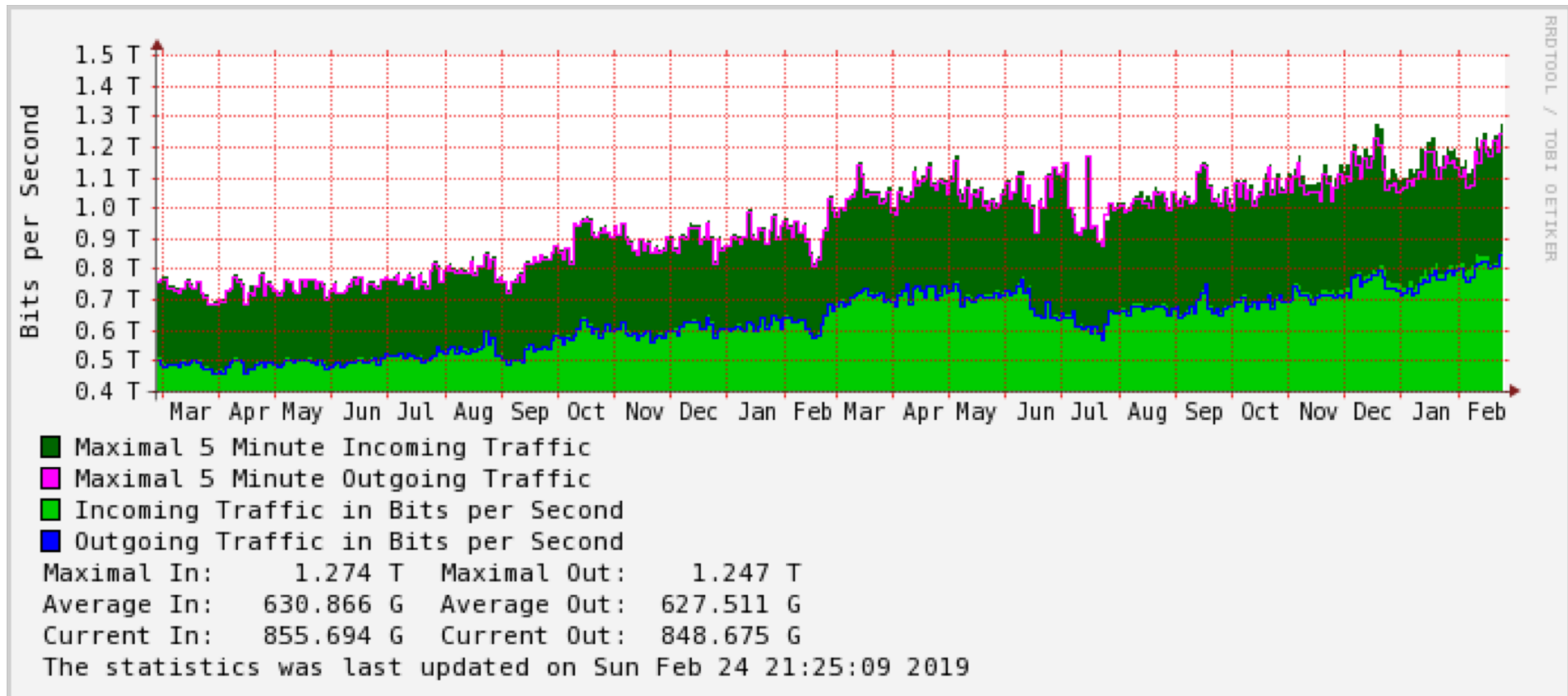
# Current HKIX Traffic

## Daily Graph (5-min average)

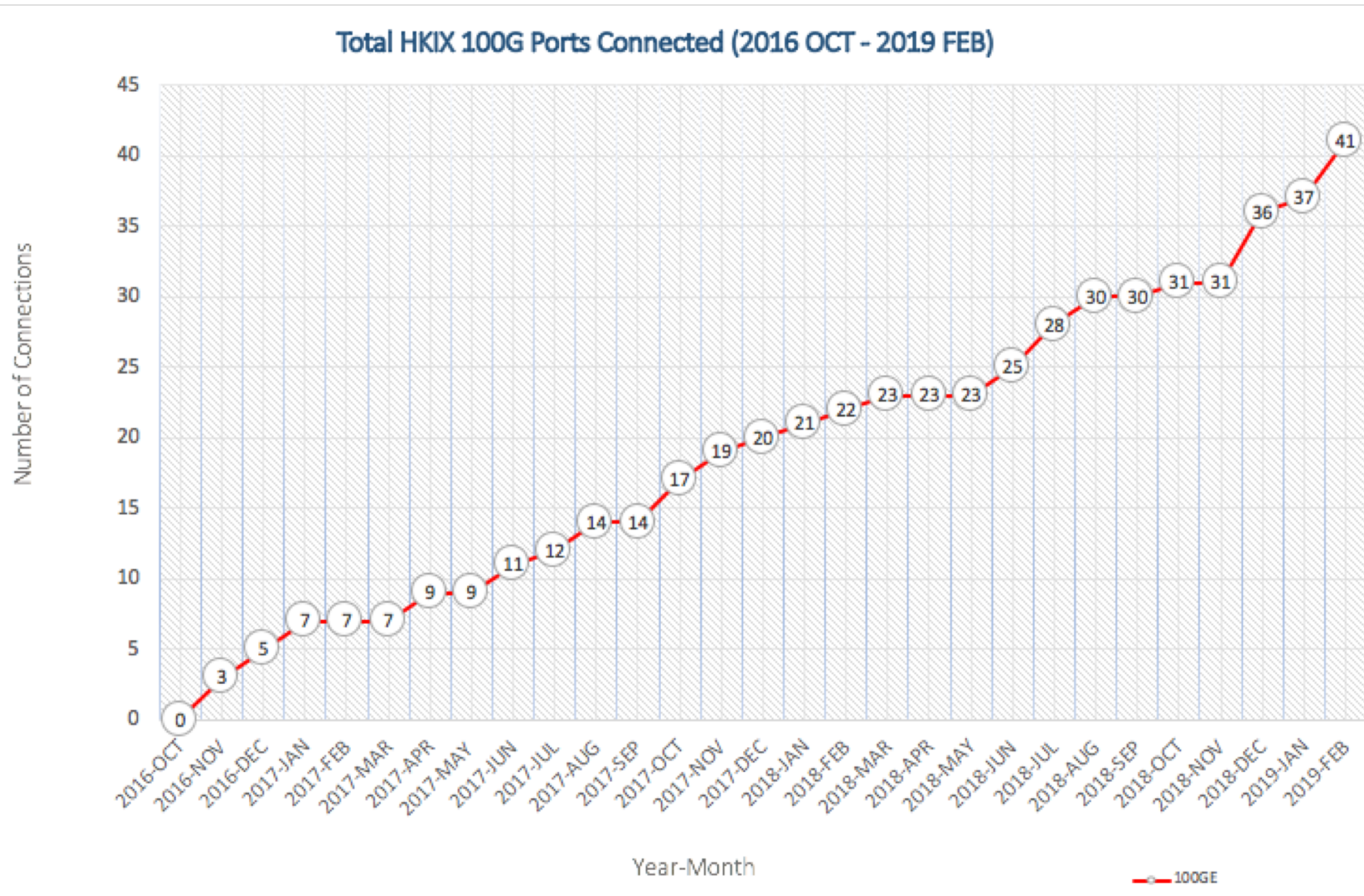


# Current HKIX Traffic

## Yearly Graph (1-day average)



# Trend of 100GE connections





# HKIX 100GE Participants (1/2)

- Akamai
- Amazon
- AOFEI
- BGP Consultancy
- China Mobile HK
- China Mobile International
- CloudFlare
- Facebook
- Google
- HKBN
- Hurricane Electric
- Level 3
- Limelight

# HKIX 100GE Participants (2/2)



- Mytek
- PCCW IMS
- Telin
- Telstra
- Tencent
- TVB
- Udomain
- Valve
- Yahoo



# Portal for HKIX Participants

## – Basic Functions (Currently Available)

1. Change Port Security
2. MRTG Statistics
  - Physical port
  - LAG port
  - Aggregated per Customer
3. Schedule Maintenance Window

## – Planned Features

- Port Application
- Site Access Application
- Filter Update
- Fault Case Reporting





# Portal for HKIX Participants

- HKIX Portal Login Page (URL: <https://portal.hkix.net/>)

**Production Now!**

A screenshot of the HKIX Customer Web Portal login page. The background is dark blue with a network-like pattern of glowing blue nodes and lines. The HKIX logo is centered at the top. Below the logo, the text 'Welcome to the Customer Web Portal' is displayed. There are two input fields: 'Username:' and 'Password:'. The 'Username:' field has a 'Forgot Password' link to its right. The 'Password:' field has a 'Login' button to its right.

HKIX  
Hong Kong Internet eXchange

Welcome to the Customer Web Portal

Username:  [Forgot Password](#)

Password:



Contact [provision@hkix.net](mailto:provision@hkix.net) for your portal account. It's free!

# Support of Blackholing for Anti-DDoS on HKIX Route Servers

HKIX route servers support **Remote Triggered Black Hole Filtering (RTBH)** for announcement of black-hole filtering

<http://www.hkix.net/hkix/anti-ddos.htm>

No. of ASNs Registered : **52**

## How it works?

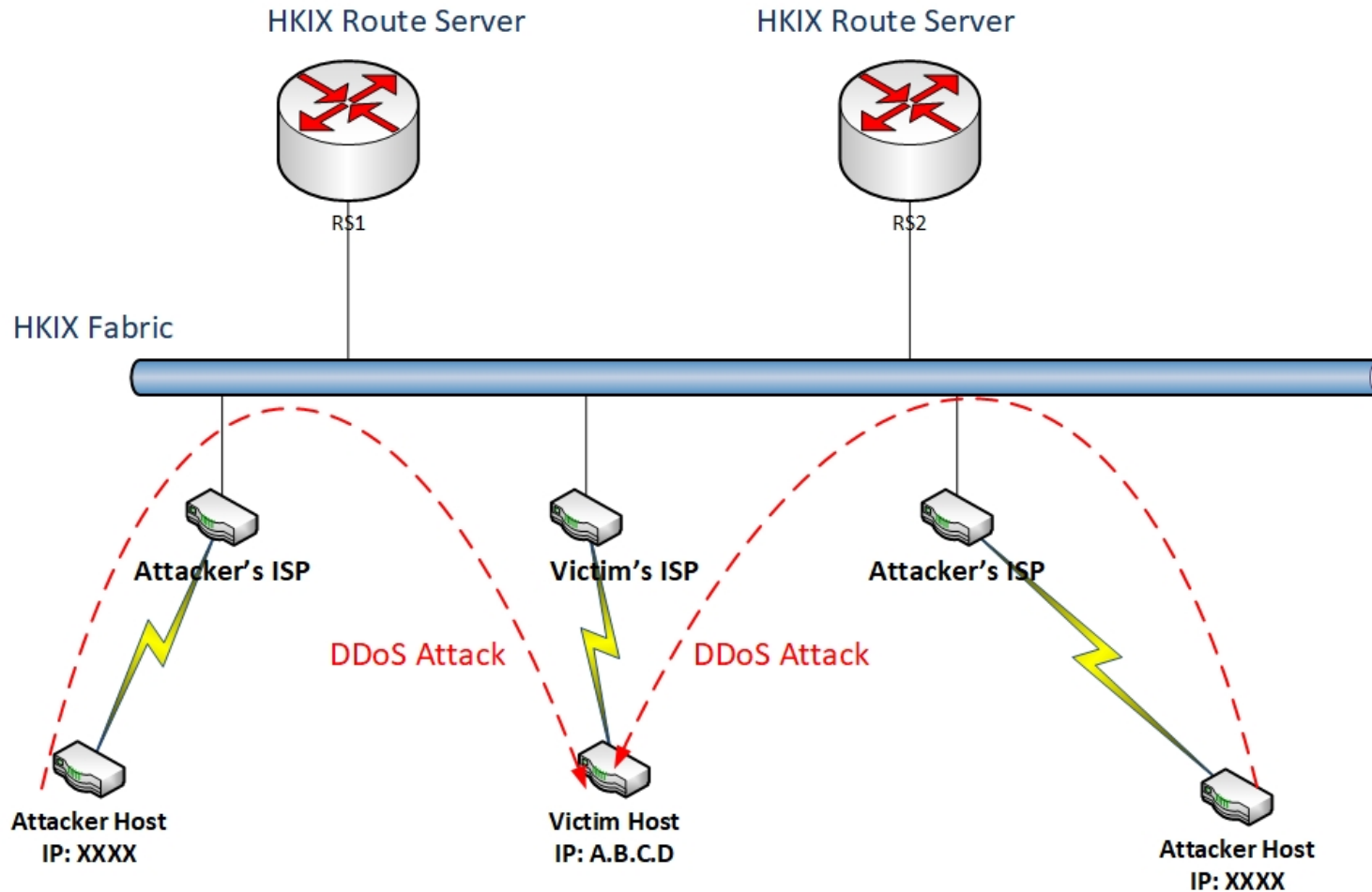
- Victim's ISP tag the /32 prefix with **4635:666** for its customer
- HKIX route servers set the prefix with next hop 123.255.90.66
- RTBH participants accept the /32 prefix and set the next hop address for 123.255.90.66 to null

## Expected Results:

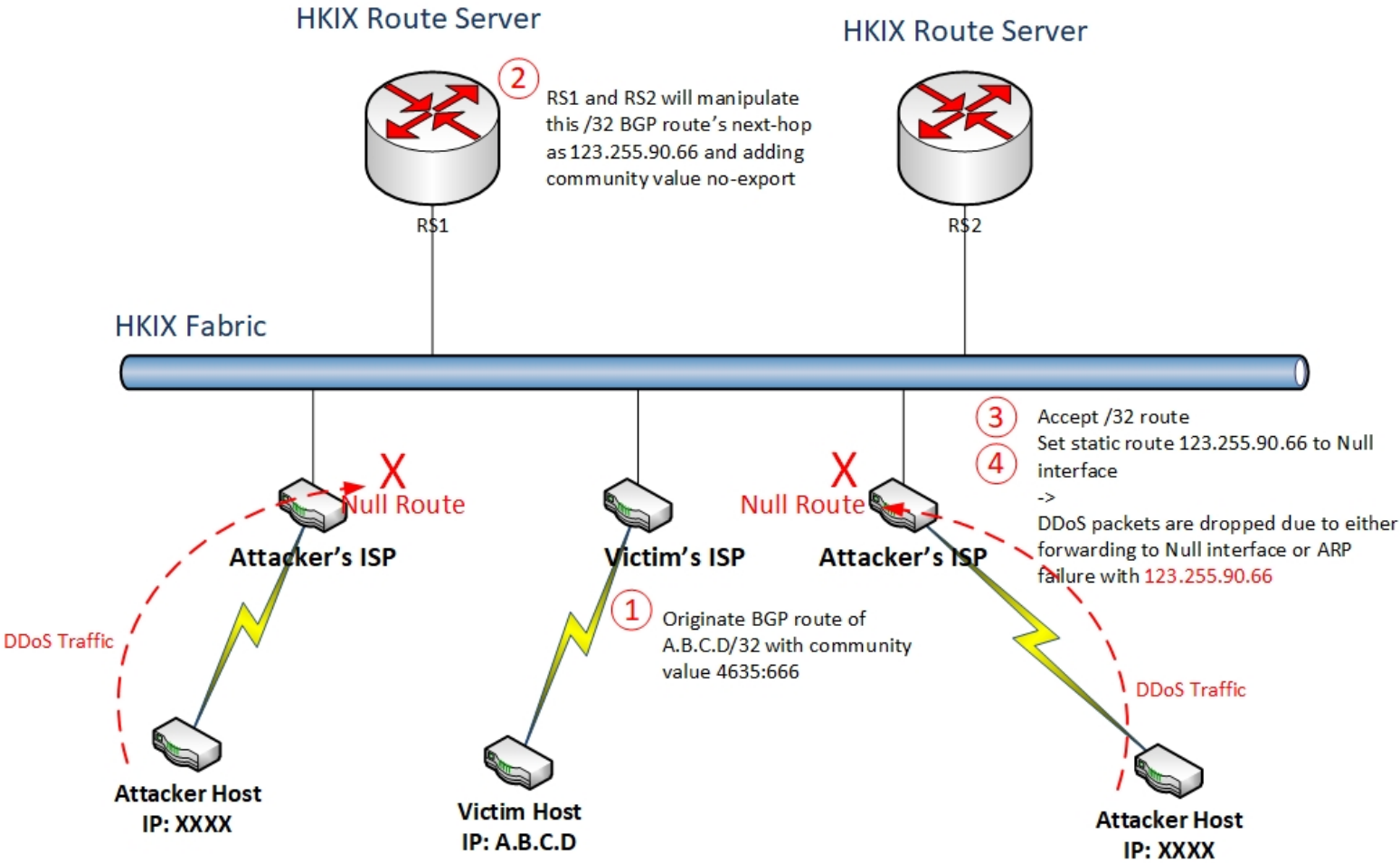
- Only the victim's IP will be unreachable via HKIX network while saving the others
- The DDoS traffic will be black-holed at the side of the RTBH participating routers which are closer to the DDoS traffic sources

# Support of Blackholing for Anti-DDoS

## on HKIX Route Servers (BEFORE)



# Support of Blackholing for Anti-DDoS on HKIX Route Servers (AFTER)



# Support of Blackholing for Anti-DDoS on HKIX Route Servers

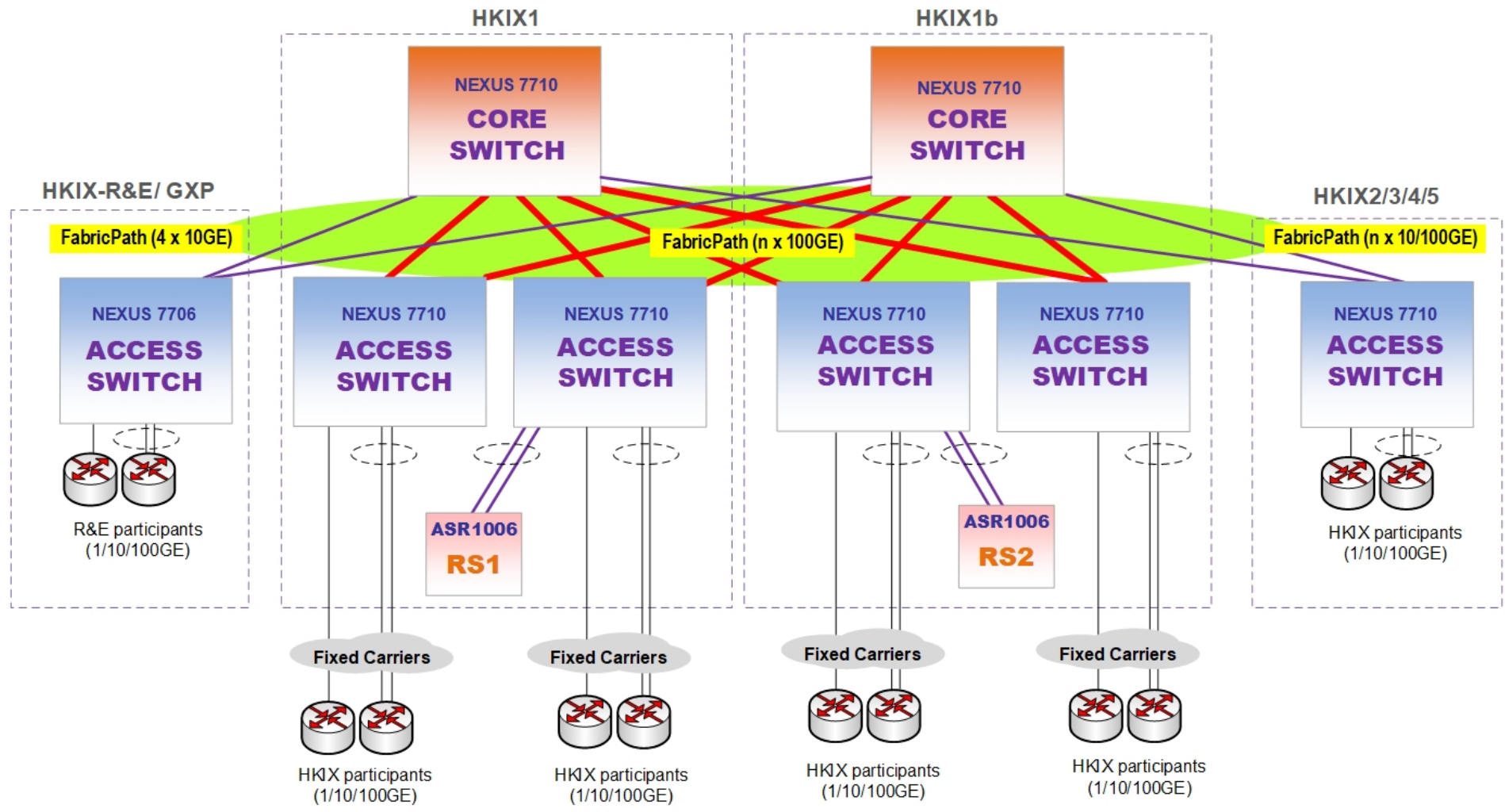
Enhancement of RTBH on HKIX route servers :

- Contact us for RTBH membership registration
- Only **RTBH registered members** can tag the blackhole route
- Register your [AS-Set](#) in internet routing database and use [IRR filtering](#) on HKIX route servers (it can minimize the risk from accidentally announced a black-holing route that you are not allowed to advertise)
- Only /32 is accepted for the prefix (e.g. victim's IP address)
- Announce your own network prefix only (**very important!!!**)
- HKIX may shutdown the connection if improper use of the RTBH reported

# Filtering on HKIX Route Servers

- HKIX supports IRR filtering on Route Servers
  - Applicable to general HKIX members
  - Filtering by IP addresses
  - Update automatically from Internet Routing Registry database
  - Please register your AS-SET at IRR database
- The Origin ASNs manual update processes will be ceased on **1-Jul-2020**
  - Please register and change to use IRR filtering before decommission of AS Number filtering
- RPKI support will be available by 2019

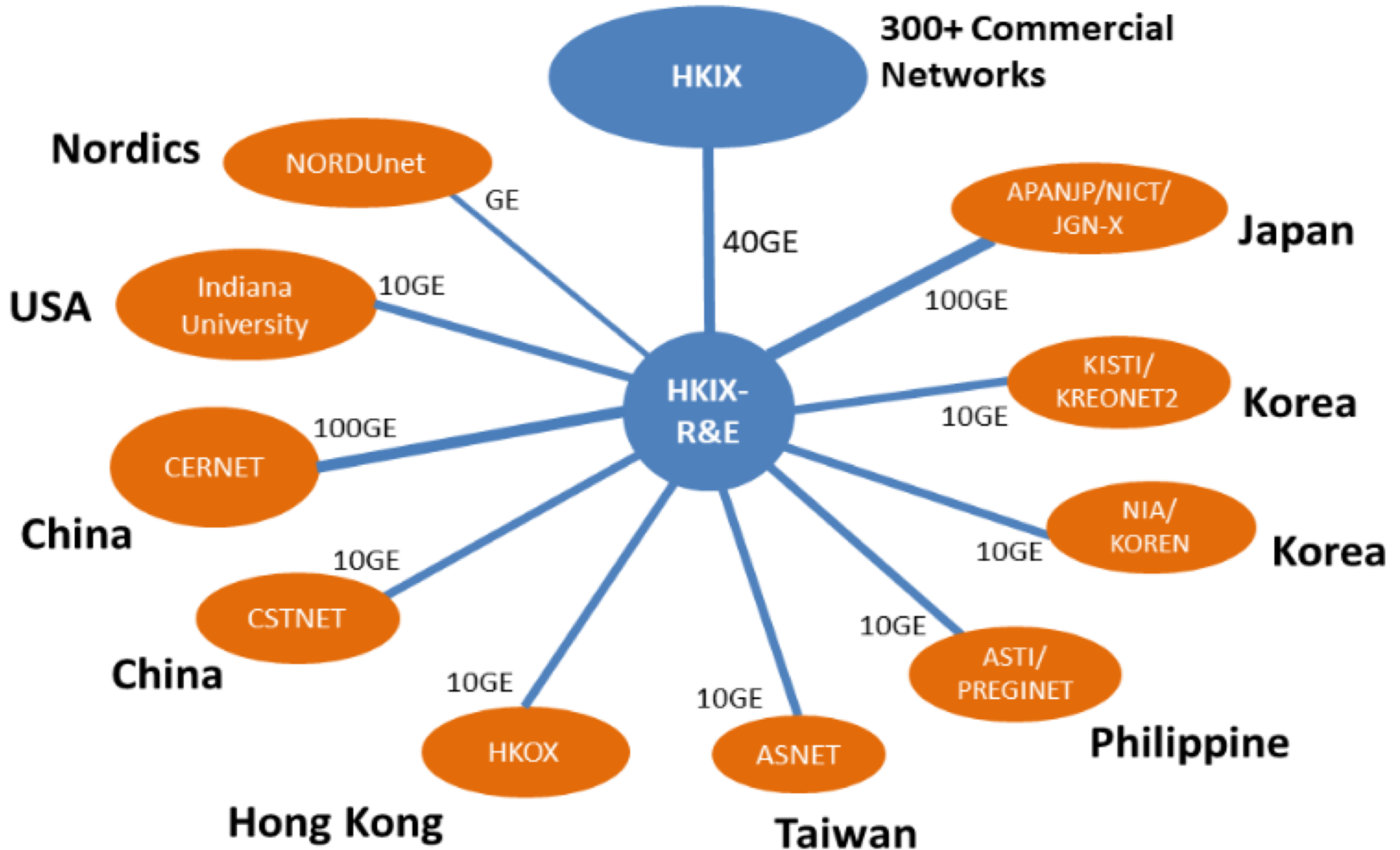
## HKIX Network Diagram (Apr 2018)



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

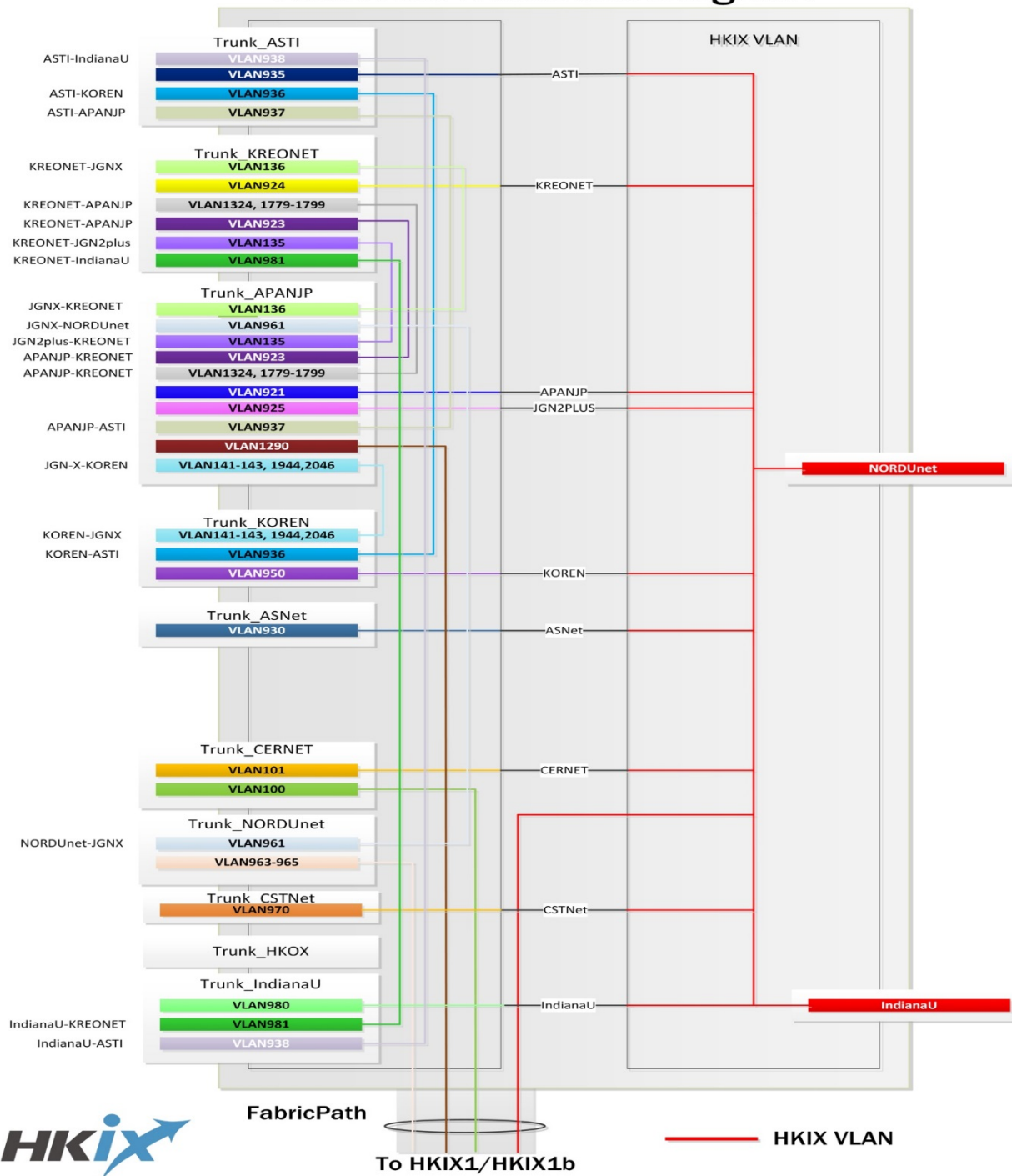


# HKIX-R&E Network Diagram

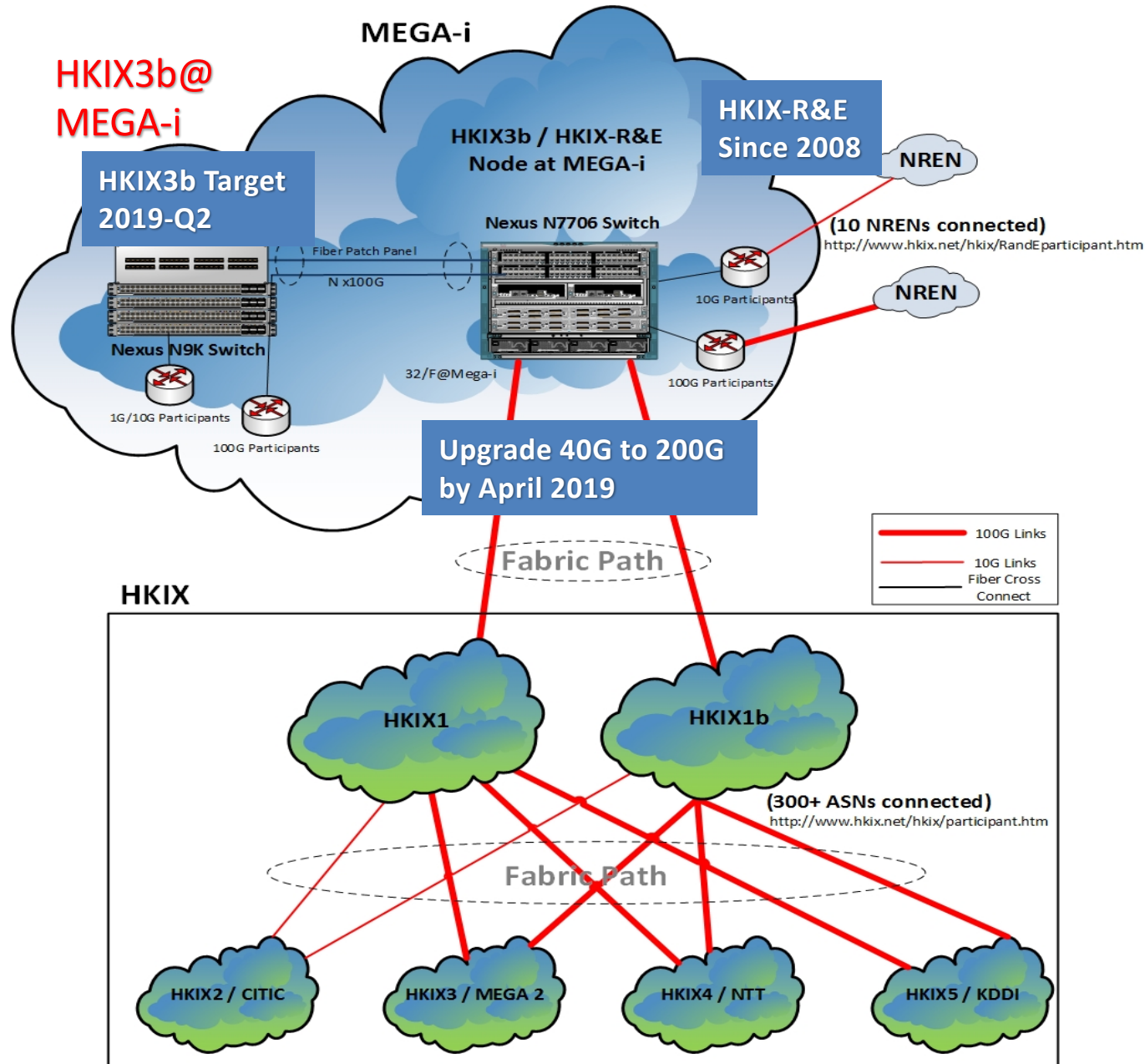




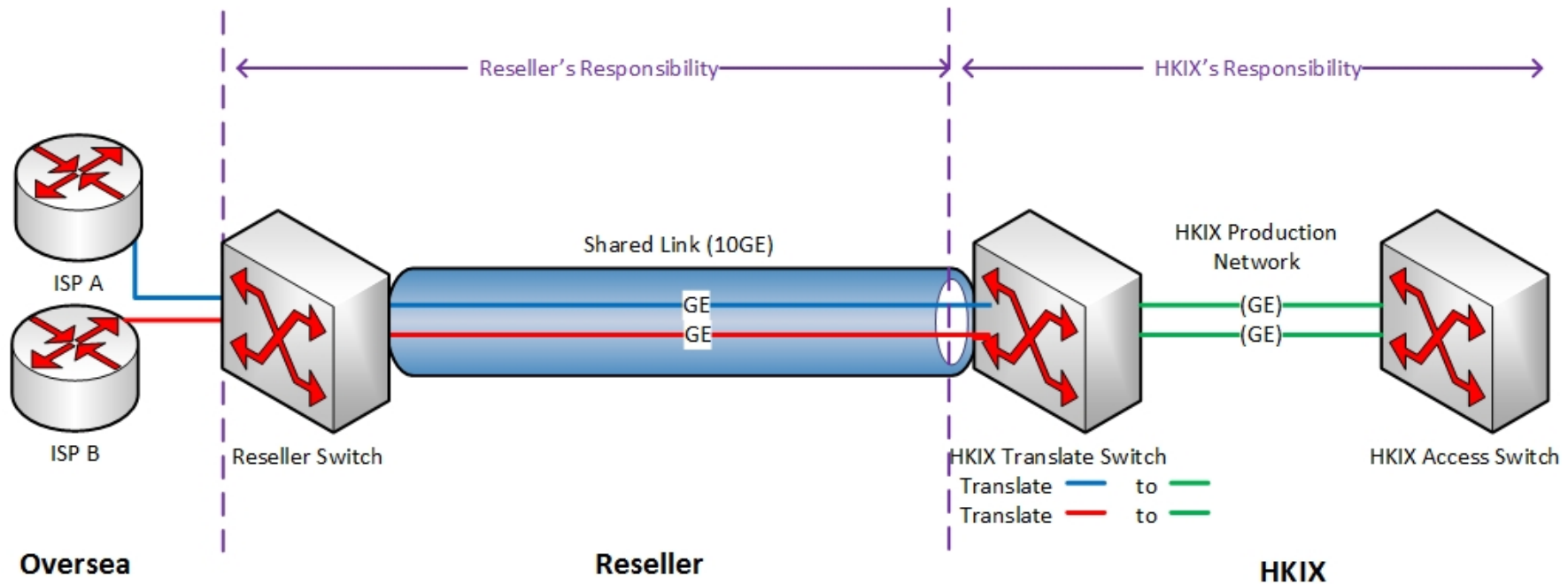
# HKIX-R&E Network Diagram



# HKIX Upgrade Plan @MEGA-i



# Reseller Network Topology Diagram





# HKIX Reseller Program

- Target oversea participants for peering
- Non exclusive arrangement / resellers can be IXPs, Data Centres, local and regional ISPs
- First batch will be available in satellite sites only
- Second batch will be extended to HKIX core sites

If you are interest be one of our resellers, please contact [info\[@\]hkix.net](mailto:info@hkix.net).

# HKIX Planned Works for 2019

- Improved Stability
  - Better Control of Proxy ARP
- Improved Services
  - Rollout portal for HKIX participants / R&E participants
  - True 24x7 NOC (both email & hotline support)
  - Improve after-hour support
  - Introduce advanced Route Server functions
  - Automatic network filter update (support updates from IRR)
  - **New HKIX Route Server**
  - **perfSONAR server**
- Improved Security
  - ISO27001
  - Better support for DDoS mitigation
  - **Implement MANRS IXP Programme for routing security**
  - **Implement RPKI on HKIX Route Servers to enhance routing security**

# HKIX Future Upgrade Plan

- Support of 400G connections
- Network traffic visibility
- Network automation
- EVPN (VXLAN)
  - Multiple vendors support
  - Unknown unicast suppression
  - VLAN translation

# HKIX



IX name	Hong Kong Internet eXchange
City, Country	Hong Kong
Point of Presence	<b>Core Sites:</b> <b>HKIX1 &amp; HKIX1b @CUHK</b>  <b>HKIX-R&amp;E:</b> HKIX-R&E@MEGA-i  <b>Satellite Sites:</b> <b>HKIX2@CITIC, HKIX3@iAdvantage, HKIX4@NTT, HKIX5@KDDI</b>
# of connected ASN	302
Peak traffic	1.34 Tbps
Route Servers	Yes (Cisco ASR1006)
Remarks	PeeringDB: <a href="https://www.peeringdb.com/ix/42">https://www.peeringdb.com/ix/42</a>

## •Information

- <http://www.hkix.net>
- [info@hkix.net](mailto:info@hkix.net)



# Thank You!

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