



# The impacts of COVID-19 pandemic on the IXPs in APAC region

IX.br IX Forum, 2-4 Dec 2020 Katsuyasu Toyama Chair of APIX association



### Self-introduction: Katsuyasu Toyama

- JPNAP (2001, 2007-2012, 2015-)
  - Representative Director, EVP
- Asia Pacific Internet Exchange (APIX) association
  - Chairperson (2010-2017, 2019-)
- Peering Asia
  - Peering Asia WG member (2017-)
- NTT
  - SVP of Internet and Mobile Services (2012-2015)
  - AS2914(GIN), AS4713(OCN)



apix





### IXP associations in the world





## APIX

- An IXP association in Asia-Pacific region
  - Established in 2010, acting more than 10 years
  - One of the founders of IX Federation (IX-F)

-with LAC-IX and Euro-IX



### **APIX Members**

#### • 32 IXPs, from 18 countries and economies

 Australia, Bangladesh, Cambodia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Myanmar, Nepal, New Zealand, Philippine, Singapore, Taiwan, Thailand, Vietnam





### **APIX members: 32**

AMR-IX (IN) AMS-IX Hong Kong (HK) BBIX (HK/JP/SG/TH/EU/US) JKT-IX (ID) BDIX (BD) BKNIX (TH) CHN-IX (CN) CNX (KH) Dix-ie (JP) Equinix AP (AU/HK/JP/SG) HKIX (HK) IIX (ID)

IX Australia (AU) JBIX (MY) JPIX (JP) JPNAP (JP) KINX (KR) Megaport (AU/HK/SG) MM-IX (MM) MumbailX (IN) MYIX (MY) NIXI (IN)

NPIX (NP) NZIX (NZ) PhOpenIX (PH) Ryukyu-IX (JP) SGIX (SG) SOX (SG) TH-IX (TH) TPIX (TW) TWIX (TW) VNIX (VN)



### **Number of APIX Members**



### JPNAP

- The largest internet exchange in Japan since 2001
- Operating in Tokyo and Osaka

- JPNAP Tokyo: 173 AS
- JPNAP Osaka: 71 AS

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Tokyo

**P**NAP

**Osaka** 

**0.79T** 

Total: 2.67Tbps



### Total traffic of JPNAP = 2.67 Tbps





### **COVID-19 in Asia Pacific**



### **Asia Pacific**

- Many separated lands
  - islands are separated by seas and oceans
- Many different cultures
  - Languages, religions, customs, and so on are different
- COVID-19 impacts are various.





### Daily confirmed new cases: JAPAN



#### Daily confirmed new cases













From the website of NHK(Japan broadcasting Corporation)



### **Current situation in Asia Pacific**

- In some countries, it looks stable
- In some other countries, it looks spreading again
- Every country is still struggling with COVID-19 to keep the balance between economy and life
- Unfortunately, this will continue for a while, until vaccines or medicines are available
- Wondering when we can go travel and meet in person...





## Survey: COVID-19 impacts on IXPs in APAC

This survey was done in early June 2020 by

#### **ISOC and APIX**







### **Survey to APIX members**

- 1. How much has peak traffic and/or daytime traffic increased at your IXP?
- 2. Any impacts on IXP operations?
- 3. Any emergency (policy or industry) actions in peering/interconnection in your country/economy?
- 4. Any other specific comments to be noted?



# How much has peak traffic and/or daytime traffic increased at your IXP?



IXP name	Country/ Economy	Peak increased: (%)	Peak increased: (bps)	Peak (daytime) increased: (%)	Peak (daytime) increased: (bps)
ΤΡΙΧ	Taiwan	almost same			
BKNIX	Thailand			30%	
PhOpenIX	Philippine				
MM-IX	Myanmar	40%	10G -> 14G		
SGIX	Singapore	8%		23%	
VNIX	Vietnam	20%	50G -> 60G		
IIX	Indonesia	8%	522G -> 563G		
IX-Australia	Australia	40%	500G -> 700G		
NP-IX	Nepal	19%	6.8G -> 8.11G		
НКІХ	Hong Kong	35%	1.3T -> 1.75T	30%	0.9T -> 1.2T
MyIX	Malaysia	20- <mark>33</mark> %			
JPNAP	Japan	10%	2.1T -> 2.4T	60%	1.3T -> 2.0T

Peak (usually night)

**Daytime Peak** 



### Internet traffic in Japan (JPNAP case)

- Yomiuri Newspaper's article using our data
  - Compared 21 Feb and 23 Apr 2020
  - Daytime traffic has become **1.6 times higher**
    - 13:00pm-16:00pm
  - Due to work from home, remote study
- My personal comment
  - Newspaper didn't describe but the increase is caused mainly by video traffic (such as Netflix, Amazon Movie, and YouTube)



https://www.yomiuri.co.jp/economy/20200423-OYT1T50330/



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#### Nepal

#### **COVID-19 Impact in npIX.**

- Peak Traffic growth 19% from earlier this year to during COVID-19 lockdown. 6.8Gbits to 8.1Gbits
- No issue of bandwidth or port capacity due to upgrades done for FIFA worldcup and thereafter to upgrade port capacities.
- OTT, News portals, WFH employees using locally hosted servers.
- Locally hosted zoom by NREN but not much impact on traffic.
- No physical or major changes executed at IX during lockdown period.
- *Some traffic like online stock* exchange, ecommerce etc. decreased during lockdown.









- Engineers/operators had to work from home (BKNIX, PhOpenIX, VNIX, NP-IX, MyIX, JPNAP)
  - had to arrange remote hands with datacenters (NP-IX)
  - physical tech support was very difficult (PhOpenIX)
- Datacenter restricted the access (BKNIX, SGIX, IIX, IX Australia)
  - additional approval from authority needed (SGIX)
  - had to bring health certificate (IIX)
  - had to use new people for remote hands (IX Australia)
- Non-urgent maintenance works were postponed (HKIX, JPNAP)
  - Only urgent provisioning requests from customers were fulfilled (JPNAP)
- Operation team was split into two teams at the early stage (JPNAP)
- Emails instead of written signatures were used internally for order and payment authorization (HKIX)
- Global players delayed decisions (TPIX)
- No impacts on operations, as all the works could be done remotely (HKIX)
- No impacts (MMIX, TPIX)

#### Internet Any emergency (policy or industry) actions ap Society in peering/interconnection in your country/economy?



- No emergency actions, no new or changed policy (PhOpenIX, MMIX, VNIX, MYIX, JPNAP)
- Government or regulator's actions
  - No emergency policies imposed although the government has issued directives to incumbent ISP to ensure they ramp up capacities to handle the surge in Internet traffic (SGIX)
  - our regulation has an action about finance reducing USO fee (Universal Service Obligation) and to urge service provider to control their quality of service. (BKNIX)
  - No such emergency but had government datacenter was initiating setting up exchange by itself which we are in discussion to work together on. (NP-IX)
- Industry's actions
  - The national broadband network (wholesale L2 network provider) gave 40% uplift on all traffic, for same price. This may be removed afterwards and that will cause a heavy cost impact on ISPs - so will hit later in the recession to follow. (IX Australia)
  - IIX APJII did not provide new interconnection services (IIX)

# Societ Any other specific comments to be noted?

- It has been a great period of co-operation apart from the heavy load of software updates from some gamer companies. Those spikes have flatlined a number of member networks. (IX Australia)
- IXPs and operators should plan ahead to prepare sufficient ports and bandwidth for traffic surge. Laying cross connect between demarcation and switches in advance can speed up the provision lead time if needed. (HKIX)
- It was very fortunate that YouTube degrade their video quality from HD to SD. It looked helping eyeball networks very much. (JPNAP)





# **Obrigado!** Any questions and comments?

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