

### **COVID-19** impacts on IXP:

### JPNAP case & other IXPs in APAC

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## Self introduction: Katsuyasu Toyama

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



Peer

apíx

**D**NA P



### **JPNAP**

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Tokyo

**P**NAP

#### **JPNAP Tokyo**: 173 AS •

- NTT Otemachi Building
- Equinix TY4 \_
- Broadband Tower Otemachi Center
- Equinix TY2
- @TOKYO CC1
- ComSpace I
- Colt Tokyo
- **JPNAP Osaka**:
  - Dojima 1st
  - Dojima 3rd
  - Dojima 4th
  - Equinix OS1





#### **Impacts on JPNAP during COVID-19**

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## COVID-19 outbreak and reaction in Japan





#### Internet traffic trend in Japan

- 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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#### **D**NAP

#### Stay-home impacts on IX traffic in early March

- Traffic graph (Green) apparently increased in daytime
  - Pink graph (1 week ago) and blue graph (4 weeks ago)
  - No school suspension 1 week ago
  - Peak in night also increased in Osaka





#### The 2nd wave?

- Japan is suffering from increase of infected persons
  - Economy gradually reopened since emergency lifted
  - Advanced companies still keeping "working from home"
  - More PCR tests than in Apr. or May
  - Serious cases, however, do not increase as number of infected





#### JPNAP traffic in the 2nd wave

- 1st wave: from April to May, both peak and average traffic increased
- 2nd wave: Currently traffic is increasing as original natural extension, or higher





### **Impacts on IXP operations at JPNAP**

- <u>Network availability and stability is our top priority</u>
  - All non-urgent maintenance works were postponed
    - considering risks and avoiding unnecessary troubles which may be caused by the works
  - Engineers should work from home by company order
    - In case an engineer infected, our office must be locked down to sanitize whole our office, and all the employees who seems contacted with the infected persons must stay home or quarantined for 14 days

Only urgent upgrade of our customers have been done.



### Actions by eyeball and content at JPNAP

- My observations:
  - Japanese eyeball network operators
    - They have enough bandwidth for their backbone and interconnection (IP transit and IX), therefore almost of them did not need urgent upgrade
  - Subscribers' degraded experiences:
    - Congested and/or unstable parts
      WiFi at home, headend/PON, or servers
  - Content providers
    - Some of them requested us urgent upgrade of their JPNAP ports, due to sudden increase of their users



#### Emergency policy actions on peering/interconnection in Japan

- No specific actions in Japan
  - Traffic increased but it could be under control
  - Some say YouTube degraded the quality of video from HD to SD helped a lot
  - Italy:
    - Telecom Italia domestic network (AS3269) temporarily connected IXPs in Italy (Milan, Rome, and Torino), and do peers and exchange traffic there
      - To help medium-class ISPs
      - Demand was not from the government but enterprises
    - It was planned to cease by the end of June, but extended to the end of Y2020





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

survey was done in early June 2020

#### **ISOC and APIX**



#### Questionnaire

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

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







#### Any impacts on IXP operations?

- 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)

#### Any emergency (policy or industry) actions 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)



#### 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)





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

