



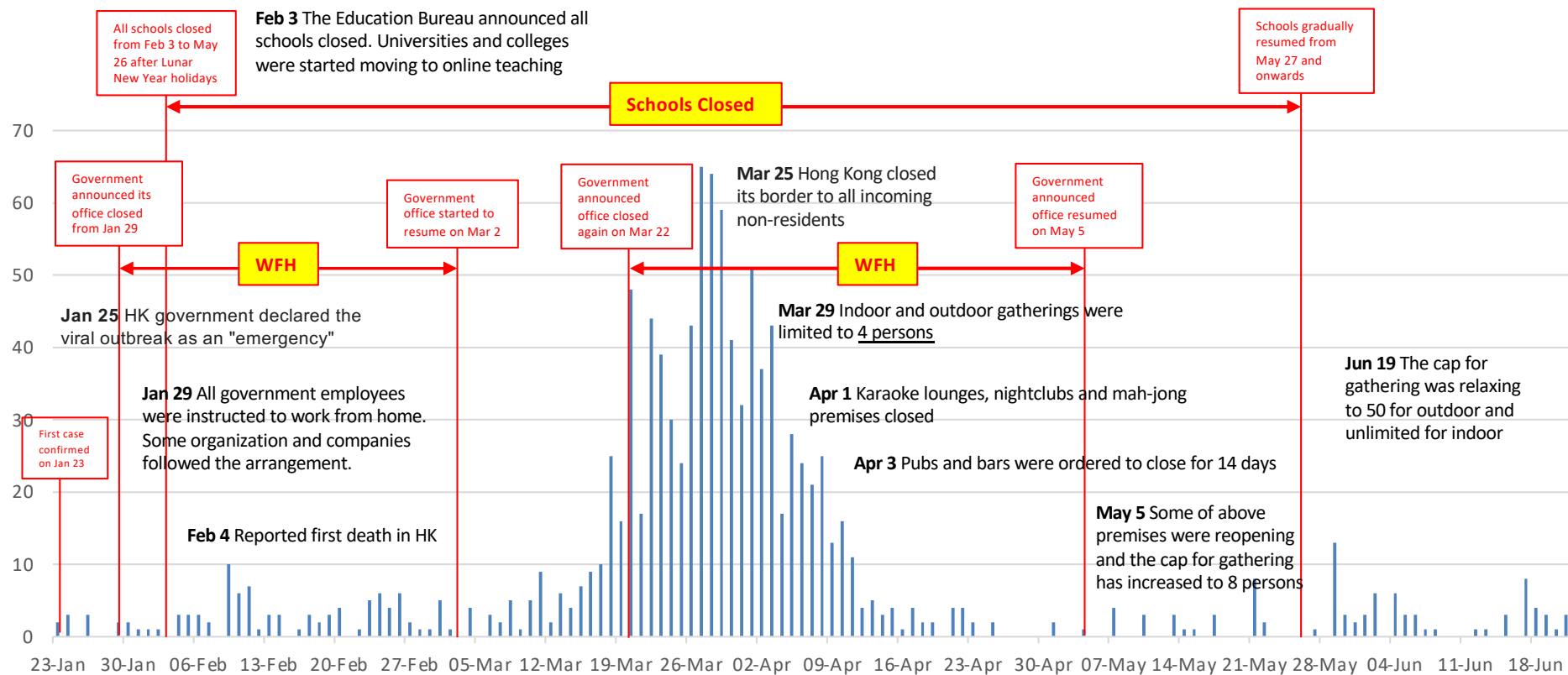
HKIX Support and Operations during COVID-19

Kenneth Chan
HKIX

25 Sep 2020

The First Wave of Coronavirus Disease (COVID-19) in Hong Kong

Total Cases: 1,178 Confirmed / 89 Hospitalized / 1 Critical / 6 Death (Jan 23 – Jun 21)

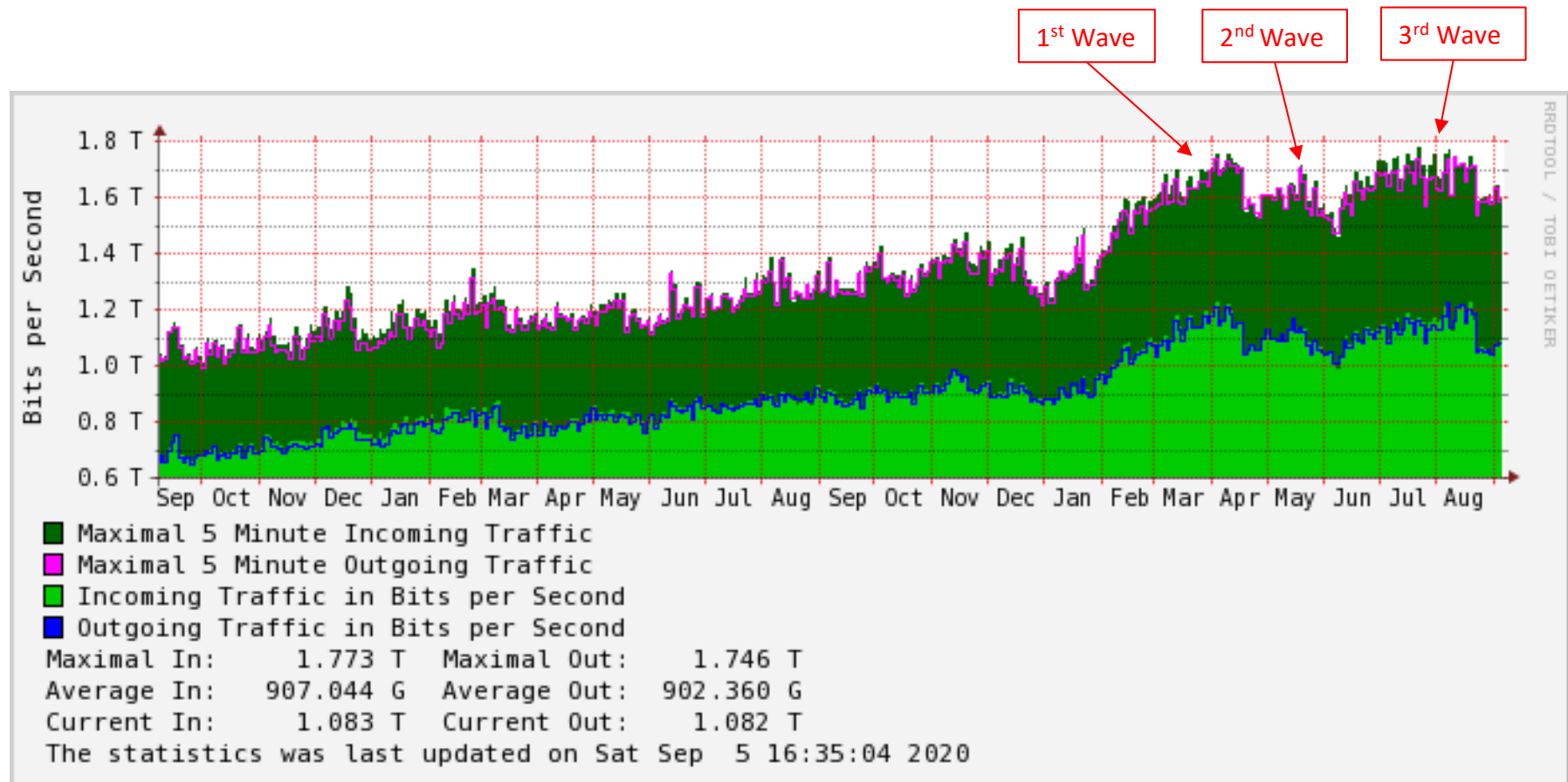


No. of new confirmed cases (Jan 23 - Jun 21)

The 2nd and 3rd Wave of COVID-19 in Hong Kong

- May 2020
 - Some imported cases reported but local cases were started to decline
 - Office works and schools were resumed gradually
- June 2020
 - A group of people in a logistics company was confirmed infected
- July 2020
 - more and more local cases were found and mostly could not be traced back to the source
 - School term ended earlier on **Jul 13**
 - Government announced WFH again on **Jul 20**
- There are total **5,057** confirmed case and **104** death until Sep 24

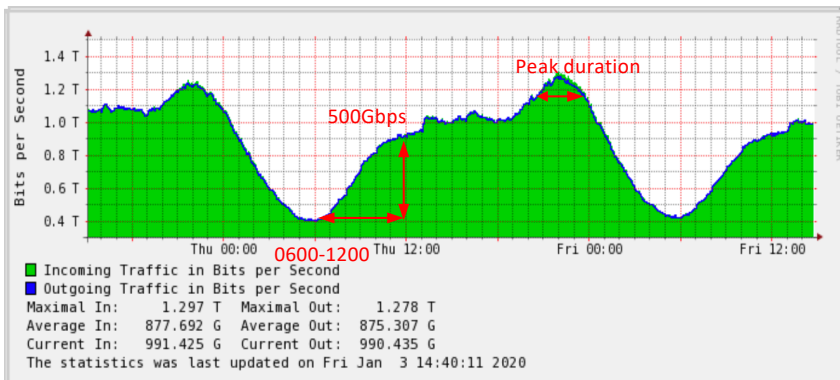
The Work From Home effects on HKIX traffic



HKIX Traffic – Before and after Work From Home

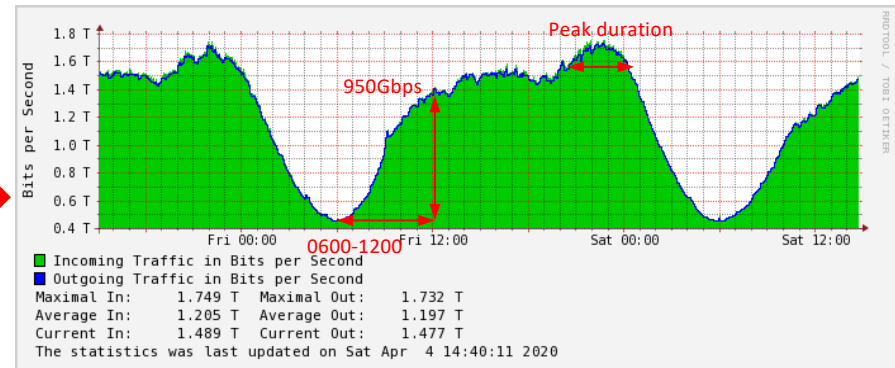
- Traffic patterns are similar (e.g. peak and non-peak time)
- Traffic was increased faster in the morning between 0600 and 1200 (83Gbps/hour → 158Gbps/hour)
- The duration of peak time was longer (2 hours → 3 hours)
- 35% increase on peak traffic and 30% increase on daily average

Daily Graph (5-minute Average)



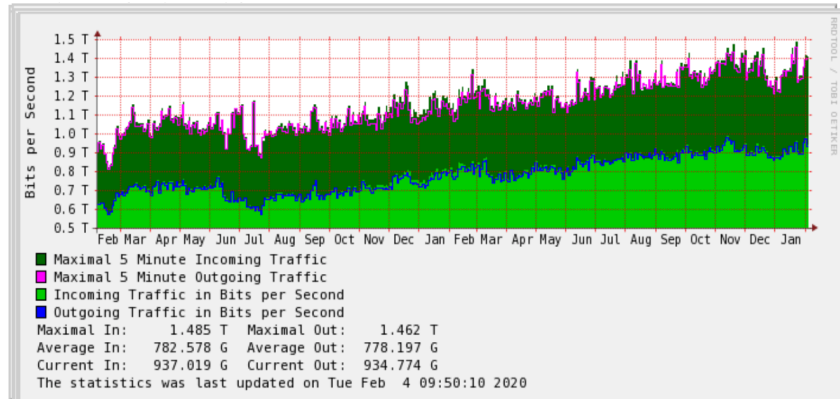
Before WFH: 3 Jan 2020

Daily Graph (5-minute Average)

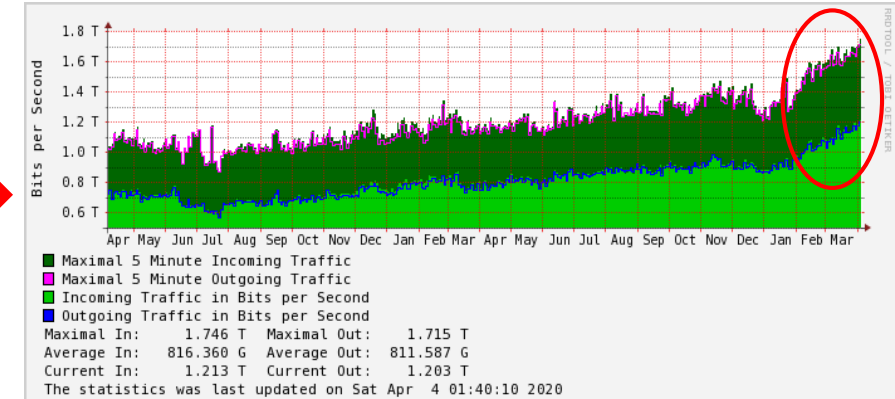


After WFH: 4 Apr 2020

Yearly Graph (1-day Average)



Yearly Graph (1-day Average)



35% increase on peak traffic and 30% increase on daily average

Some observations on traffic and port demands during COVID-19

- People are forced or recommended WFH during the COVID-19 pandemic
- Number of ports increased from Jan to Aug, 38%(21) on 100GE and 4%(15) on 10GE
- HKIX traffic increased **~35%**, from **1.3Tbps** to **~1.75Tbps** from late Jan to mid Apr
- The increased traffic was mainly from various online platforms
 - Video conferencing / collaboration tools
 - Online teaching / e-learning
 - Video streaming
 - Online gaming
 - Internet banking
 - Online shopping
- Most of these providers had 30-40% traffic increment while **video conferencing, Internet banking** and **online shopping** had a record of 200%-300% significant growth



Special efforts to handle the demand during COVID-19

- Increase network capacity
 - Ports - additional switches are installed in core and satellite sites
 - Bandwidth - more inter-switch / inter-site links are added
- Monitor traffic usage and alert participants
 - Monitor the traffic on individual participant links
 - Send email to participant when the usage is full
- Participant urgently upgrade to 10GE or 100GE
 - Pre-patched ports between patch panels and switches
 - Enable Provision Team to fast provision the port remotely
- Support of business and technical operations
- Allow customers delay payment if they could not return to office
- Allow customers suspend the service temporarily to reduce cost

Lessons learned and messages to be shared with other IXPs

- No major impact on HKIX operations during the COVID-19
- IXPs and operators should plan ahead for their capacity
- Enable your technical support and provision team WFH to provide the services **remotely** and **securely**
- Establish the standard operation procedures with your NOC to monitor the traffic usage closely and alert your participants
- Pre-installed cabling between patch panels and switch ports can speed up the port provisioning
- Discuss with your DC and make use of their remote-hands service
- Local loop providers must install circuits onsite and perform end-to-end testing before connecting to the production network
- Network maintenance and non-urgent project works should be postponed



Thank You!