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Position Paper

The impact of Covid-19 on network traffic across Asia

June 2020

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Introduction

Covid-19 lockdowns have changed things. Not only with network traffic and the service provider, but the entire attitude about working and socializing from home, and what will happen in the future.

There has been a lot of large-scale analysis across many industries on the effects of Covid-19 on the overall global market.

But, what's coming next? What are the challenges for Communications Service Providers (CSPs), now that Covid-19 is permanently changing us and creating a new normal?

In this paper, we present the dramatic changes in network traffic and user behavior that occurred across Asia during the pandemic lockdown. In addition, we highlight steps that were and can be taken to resolve unexpected surging changes, now and in the future. Regardless of network capacity, CSPs can ensure minimal network congestion and optimal Quality of Experience for their end-users.

Part I
The early impact in other regions

Back in March 2020, during the early stages of the pandemic, in order to manage network traffic, operators in Spain, as an example, were begging customers for help.

When the Covid-19 lockdowns started, Spanish telcos issued a joint statement to customers, asking for fair and reasonable use of the internet over the foreseeable future.

The request to customers included this specific guidance:

- Only download documents that are needed immediately
- For heavy files, send links
- Rather than mobile, use a landline when possible
- Avoid mass emails and collaboration tools such as Microsoft Teams and Slack
- Use bandwidth-hungry leisure applications during off-peak hours

According to a report issued in May, UK broadband download speeds, at some carriers, were dramatically impacted by new customer usage behaviors, such as increased daytime data consumption related to the lockdown.

Regarding voice traffic, mobile network operators like AT&T in the USA noticed a 25-30% average increase in wireless voice minutes during March and April of 2020. But, AT&T is not alone in this trend. According to sources at IDC, T-Mobile and Verizon experienced a similar increase in both voice and data traffic on their mobile networks.

Are these experiences in Spain, the UK, and the USA representative of the global trend? Are other parts of the world experiencing the same phenomena?

Part II
The impact of Covid-19 on CSPs in Asia

The broad and varied CSP (communication service provider) landscape in Asia, as well as the sheer number of subscriber customers, provide a unique opportunity to assess the impact of Covd-19 on network operators on a more global scale.

To conduct this assessment, we analyzed changes in network traffic across different types of networks in different countries in Asia:

- Types of network:
  - Mobile, fixed
- Countries:
  - India, Taiwan, Indonesia, Australia, Pacific Islands
- Location of Data Collection:
  - Access, transport, and gateway

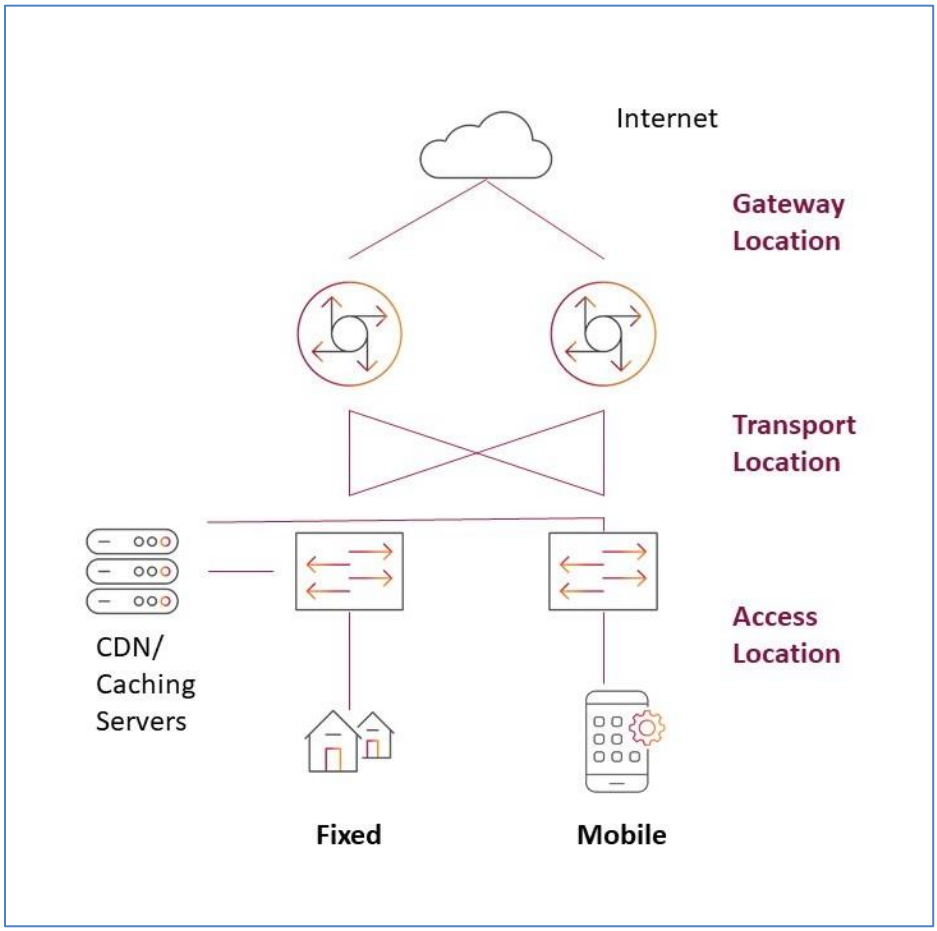

Figure 1: Location of data collection

Part III
India: dramatically increased daytime usage

In India, we observed an overall increase in mobile daily volume in the range of 15-20% more than pre-Covid-19 rates. There was a more pronounced increase of usage during daytime compared to night. Also, Peak Hour Traffic (typically during evening) showed less growth.

We noticed a 7% increase in overall streaming usage on mobile devices, as well as a 35% increase social media and meeting application usage.

Part IV
Australia: similar findings

Mobile findings were similar in Australia, with an increase of daily utilization of 18%.

Significantly, we see an increase of more than 100% in Zoom usage and a slight increase in other VOIP services as well.

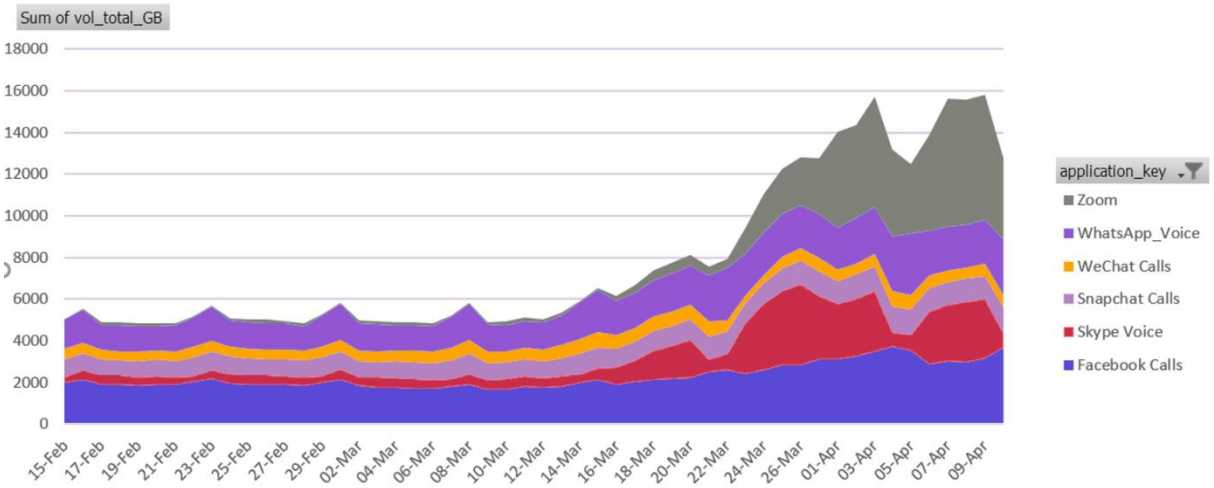

Figure 2: Zoom and VOIP app usage in Australia

In relation to streaming, we noticed an increase of more than 145% in viewing time (from 2.4 to 3.6 hours, on average).

In Australia, since the outbreak of Covid-19, gaming-related usage also increased significantly, with most of the traffic associated with the Sony PlayStation Store and the download of Xbox games.

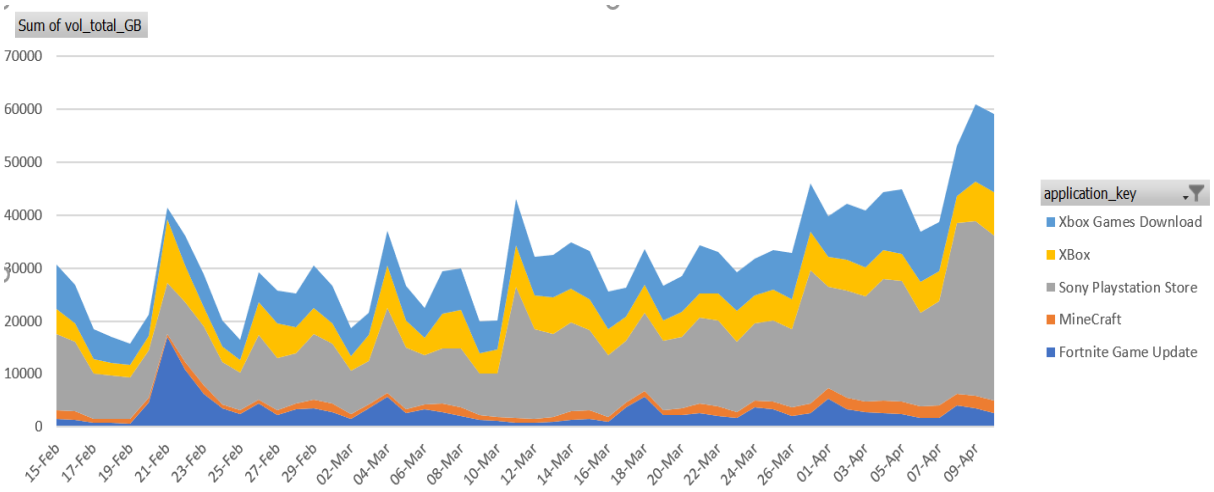

Figure 3: Gaming-related usage in Australia

As usage expands and peak traffic increases on the network, we are noticing a degradation in performance that may translate to decreased user-perceived quality of experience (QoE). There has been an 8% increase in RAN latency, as well as a 3% increase in retransmissions.

Part V
Pacific Islands: more than a 25% increase in volume

In the Pacific Islands, we observed significantly increased usage during daytime.

Before Covid-19 there was a peak hour in the evening. However, during the pandemic, we are seeing pronounced peaks during the daytime. Furthermore, we see an increase in overall volume by more than 25% per day, every day of the week, with a significant volume increase in Facebook, web, P2P, and streaming applications. Notably, P2P application usage increased by 100%, even on mobile.

Network traffic related to the most popular applications, most notably YouTube and Facebook, increased 25% on top of their already significant usage.

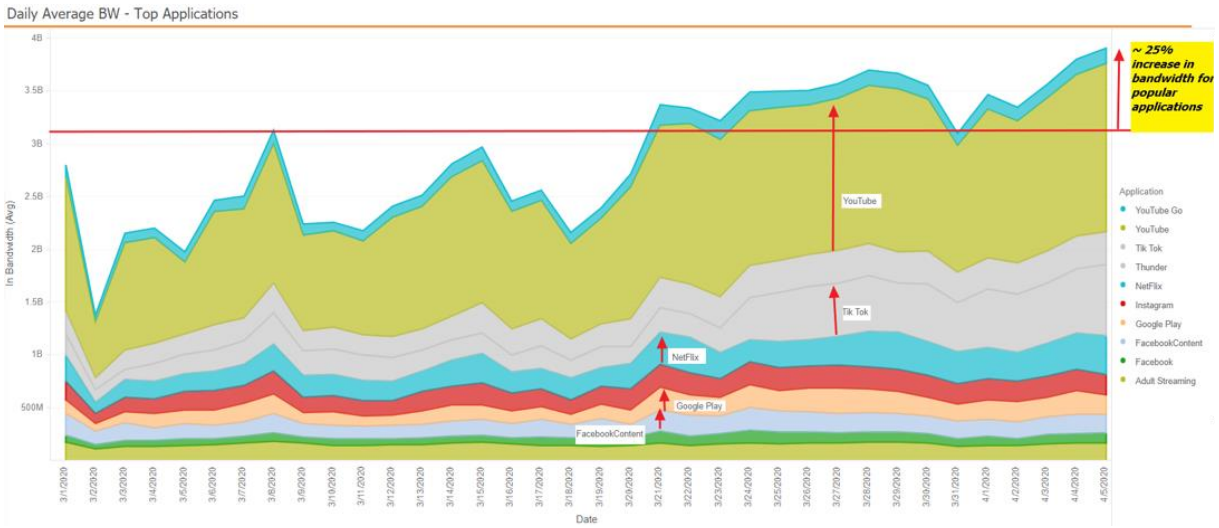

Figure 4: Bandwidth of top mobile applications in the Pacific Islands

The Covid-19 pandemic seems to be inspiring cybercriminals to increase their level of activity in the region, as well. Since the crisis started, we are seeing more than a 500% increase in network attacks each day, which have the potential to dramatically impact subscribers who are ever more dependent on network traffic for work, study and social activity.

Part VI
Indonesia: a significant volume increase

On fixed networks, findings in Indonesia were particularly interesting with an increase of daily utilization of as much as 26% more than pre-Covid-19 rates.

However, there was minimal increase in content streaming from premium video content providers. What we saw instead was a very profound impact on web applications and a significant increase in VOIP, music streaming, and file transfer activity.

For example, the impact of the lockdown can be seen more clearly when reviewing the usage of the top applications:

- YouTube had a 40% increase
- Gaming had a 20% increase
- Zoom had a 500% increase
- WhatsApp calls had a 40% increase
- Other VOIP had a 20% increase
- WhatsApp had a 60% increase

Conclusion

In summary, these were our findings in Asia:

- 20-25% increase in daily volume of traffic
- 10-15% great peak bandwidth
- 15-55% increase in daytime traffic
- 10-20% more streaming usage
- 20-30% increased usage of social media and VOIP
- 50-100% increase in business app usage
- 25-100% more traffic related to gaming and P2P
- 3-5X more network-level attacks
- 5-10% degradation of subscriber QoE (quality of experience)

In regard to the increase in streaming, the actual impact is reduced due to the decision to downgrade to SD (standard definition) by popular content providers. For this reason, we expect streaming volume to climb significantly in the near future as resolution limitations are removed.

Application usage, in general, increased significantly in Asia, which is inline with other regional trends. However, the list of most popular applications is worth noting. In Asia, the most popular applications were YouTube, WhatsApp, Zoom, Fortnite, and BitTorrent.

Streaming	Social Media	Business	Gaming	File Download
YouTube	WhatsApp	Zoom	Fortnite Game Update	BitTorrent
Netflix	Line	Outlook	Minecraft	Google Play
Amazon Video	Facebook Calls	Google	Sony PlayStation	iTunes
Disney+	Viber	OpenVPN	X-Box	Apple
TikTok	We Chat	Box	PUBG	Other P2P

Figure 5: Most popular applications in Asia

All in all, Covid-19 is affecting network traffic everywhere. Some networks are holding up better than others. All networks can be optimized to ensure that performance sensitive applications receive prioritized bandwidth allocation when the networks are congested. This can be implemented while fully respecting net neutrality regulations. In our experience networks can handle 10-15% more traffic than it appears, while maintaining end-user QoE, through judicious enforcement of real-time traffic management policies. Deep Packet Inspection (DPI) is the only way to achieve both the necessary granular visibility into the network traffic as well as the fine-tuned control

over band-width allocation to support enforcement of fair optimization policies. Inline DPI from Allot can further minimize congestion, by removing DDoS traffic within seconds of large-scale or background attacks.

How Allot can help

Traffic management solutions from Allot are powerful tools that can help CSPs (communication service providers), including mobile and broadband network operators, to cope with the ongoing impact of the Covid-19 pandemic and the "new normal" in which all find ourselves.

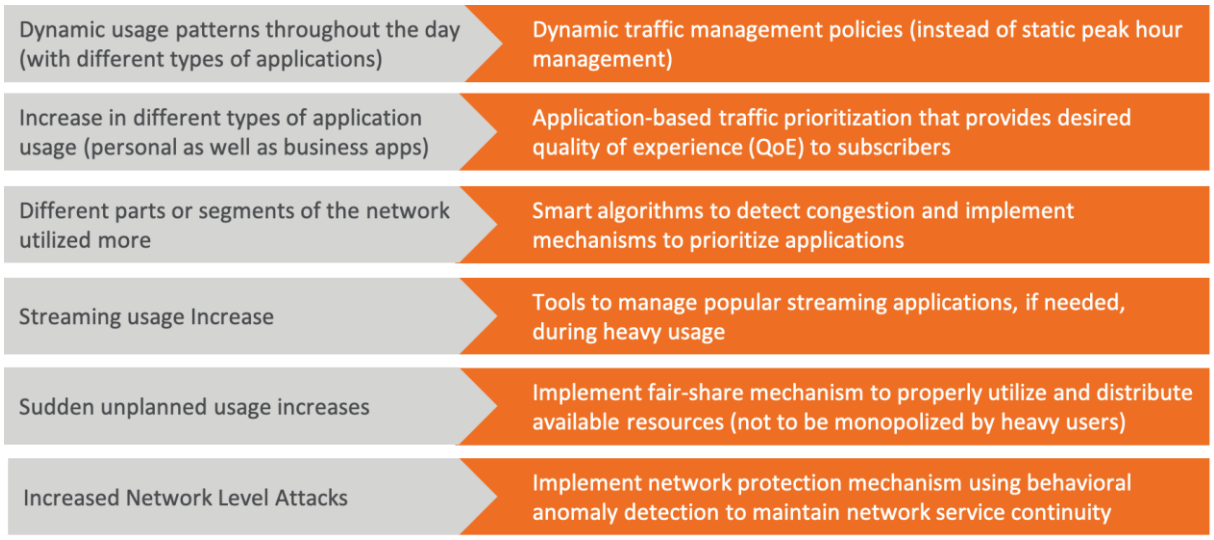

Figure 6: Some common issues and how Allot can help

To learn more, a wealth of information about tools made especially for CSPs has been created to help you.

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