

### HKNOG 9.0 New Normal in Cloud Adoption and Interconnect Behavior after COVID-19

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# Company Background









#### MEGA Plus (Tseung Kwan O)

Flagship High-tier Data Centre in the Cloud Age

#### MEGA-i (Chai Wan)

Most Connected Carrier & Cloud Neutral Hotel

#### MEGA Two (Shatin)

Strategic Connectivity Gateway to China Market

### ONE (Kwun Tong)

Perfect Location for Fast-expanding New CBD in Kowloon East

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# What Happened During COVID-19?



### What happened during COVID-19?







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### What happened during COVID-19?



Daily app sessions for popular remote work apps



"Microsoft has seen a <u>huge 775 per cent</u> increase in its Cloud services in regions that have enforced social distancing or 'shelter-inplace orders. Microsoft Teams now has more than 44 million daily users and they generated over 900 million meeting and calling minutes", Jared Spataro, Corporate VP for Microsoft 365.

Netflix decided to <u>switch its high-definition</u> video streams in India, Australia and Latin America to <u>slightly lower quality</u> to reduce the traffic they create there by 25 percent, and YouTube said it would make all global streams <u>standard definition</u>.

## What do we observe in DC immediately?



#### Working From Home







#### Virtual Meeting







#### **Observations**

- Quarantines around the world have made people more reliant on the internet to communicate, work, learn and stay entertained.
- The use of YouTube (Google), Netflix, Zoom videoconferencing, Microsoft (Teams), Classroom and Hangout Meet by Google, Facebook calls and videogaming has surged to new highs.



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### What is the implication in Long Run?





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# Demand for Service Improvement

### (e.g. Microsoft Teams in Office 365)



# VPN Transform into Dedicated Connection



#### **Site-to-site VPN**

- End-Customers forms VPN tunnel over Internet.
- Speed and Latency requirement is stringent



#### **Dedicated Connection**

- End-Customers requires Direct / Dedicated Connection to Cloud.
- Total solution on End-to-End Connectivity, including the failover design, expected.

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#### Microsoft Teams is running on Office365 (Over **Cloud**)

## Typical Set up on Teams call (Over **Public Internet**)

- User within its own "Customer Network" initiates the Teams call at Office 365 (Cloud) over Public Internet.
- Other Users (Home/Mobile User, Users in other Cities) are joining the calls at Office365 (Cloud) via Public Internet.
- PSTN Users (i.e. normal phone call) can callin via Microsoft Voice gateway at Office365 (Cloud)



**Source:** <u>https://docs.microsoft.com/en-us/microsoftteams/microsoft-teams-online-call-flows</u>



The Team calls traffic can be either through the server at Office365 (**Cloud**) (i.e. Arrow (3) and (4)) or **Direct Calls** (i.e. Arrow (2))



**Source:** <u>https://docs.microsoft.com/en-us/microsoftteams/microsoft-teams-online-call-flows</u>



For better network performance and security, companies may apply VPN for some internal users, that their call traffic must pass through VPN back its own "Customer Network" before going Office 365(**Cloud**) server.



**Source:** <u>https://docs.microsoft.com/en-us/microsoftteams/microsoft-teams-online-call-flows</u>



ExpressRoute can help in securing the traffic fully under control

- VPN between End-Users and the Company Network,
- ExpressRoute between Company Network and Office365 (Cloud) server.



**Source:** <u>https://docs.microsoft.com/en-us/microsoftteams/microsoft-teams-online-call-flows</u>

# Change in Cloud Connectivity Behavior





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### **Public Internet Vs Cloud Gateway Connection** Consideration in Cost Savings (e.g. AWS)

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- Bandwidth required: 100M [Typical Apps/Web application by E-Commerce Customer]
  - ~3 TB per month Data transfer IN &
  - ~13 TB per month Data transfer OUT



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#### **Public Internet Vs Cloud Gateway Connection Consideration in Cost Savings (e.g. AWS)** sunevision

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- Bandwidth required: 1G [Typical Cloud Use Case in Data Analytics by Global Enterprise]
  - ~32 TB per month Data transfer IN
  - ~127 TB per month Data transfer OUT



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### **Public Internet Vs Cloud Gateway Connection Consideration in Cost Savings (e.g. AWS)**

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- Bandwidth 10 GB/s [Typical CDN Usage by Global OTT Players]
- ~316 TB per month Data transfer IN
- ~1,266 TB per month Data transfer OUT



## **Typical Use Cases by Enterprise**



#### **Observations**

- Different cloud Use cases have different bandwidth requirements
- Cloud Exchange does provide a cheaper options in most cases (both single and multi cloud deployment) than Direct Connection

(Exception: High speed connection (i.e. 10G))

| Case | Cloud usage                                     | Deployment   | Bandwidth | Data in per<br>month | Data out per<br>month | Cheapest option                    |
|------|---|--------------|-----------|----------------------|-----------------------|------------------------------------|
| 1    | Partial app/web<br>application                  | Single cloud | 100M      | 3 TB                 | 13 TB                 | Cloud Exchange                     |
| 2    | Data analytic                                   | Single cloud | 1G        | 32 TB                | 127 TB                | Cloud Exchange /<br>Direct Connect |
| 3    | CDN, live streaming or full app/web application | Single cloud | 10G       | 316TB                | 1,266 TB              | Direct Connect                     |

# **Connectivity Use Cases for MNC in Asia**

(e.g. Microsoft Azure Deployment)



### How MNC Secure Network Performance? Hybrid (Cloud + Colocation) + Long-haul Connectivity





#### **Primary by Azure Backbone**

- Cross-Regional VPC Peering
  To support transacting application or large set of computing data in between two regions
- ExpressRoute Global Reach
  On-premise Inter-connect with each other

Network Path and Performance Transparency may not be sufficient

### How MNC Secure Network Performance? Hybrid (Cloud + Colocation) + Long-haul Connectivity





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### New Normal in Cloud Adoption and Interconnect Behavior after COVID-19



- Immediate Surge in Interconnect demand; while Higher Cloud Adoption expected in long run.
- Cloud Service at Direct Connect rather than VPN over Public Internet; Demand for More Resilience is observed.
- Cloud Exchange Service shall be more scalable and effective as New Normal Interconnect Options by Enterprises



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