Network Infrastructure - Trends and Evolution

Anil Simlot

CenturyLink

Today in the History of Technology
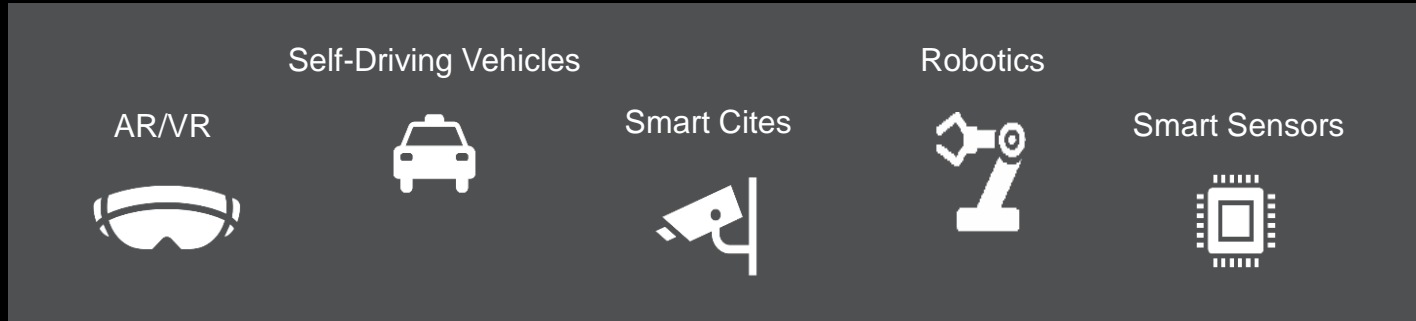

NASA Photo - EC77-8852

CenturyLink®

Internet of Things

There will be over 28 billion connected devices and over 150,000 GB of data per second by 2022 [1]

DATA

[1] 2018 Cisco – Visual Networking Index: Forecast and Trends – 2017 – 2022.
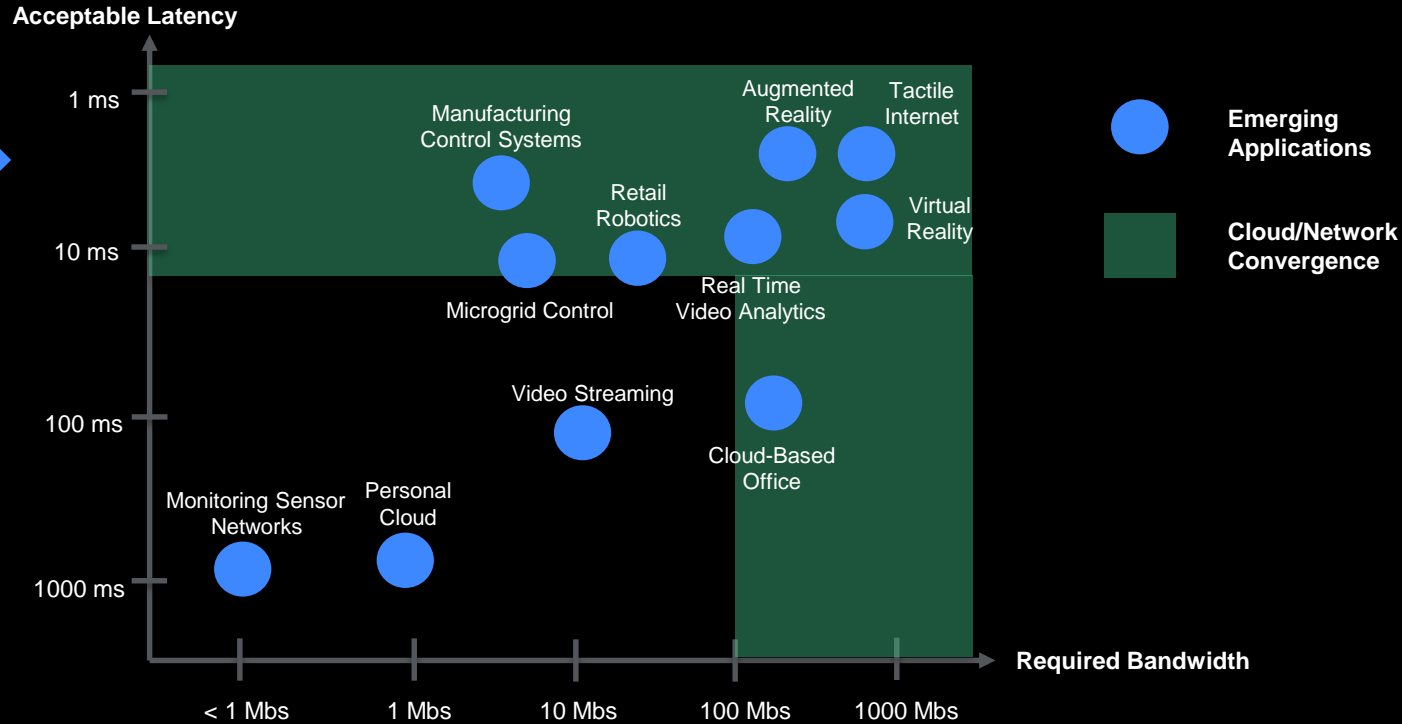
CenturyLink

Growth of Performance Sensitive Applications

The growing number of data intensive, real-time applications is driving demand for higher bandwidth and lower latency

Self-Driving Vehicles

Robotics

AR/VR

Smart Cites

Smart Sensors

- Traffic associated with virtual and augmented reality applications is poised to grow 12-fold from 2017 – 2022[1]

- Internet video surveillance traffic will increase 7-fold from 2017 - 2022[1]

[1]- 2018 Cisco – Visual Networking Index: Forecast and Trends – 2017 – 2022

CenturyLink

Latency and Bandwidth Matter

Acceptable Latency

- 1 ms
- 10 ms
- 100 ms
- 1000 ms

Required Bandwidth

- < 1 Mbs
- 1 Mbs
- 10 Mbs
- 100 Mbs
- 1000 Mbs

Manufacturing Control Systems

Retail Robotics

Augmented Reality

Tactile Internet

Virtual Reality

Microgrid Control

Real Time Video Analytics

Video Streaming

Cloud-Based Office

Monitoring Sensor Networks

Personal Cloud

Emerging Applications

Cloud/Network Convergence

CenturyLink®

The Cloud and IT Agility

83% Of Enterprise Workloads are projected to be in The Cloud By 2020[1]

Network Agility Must Match Cloud Agility

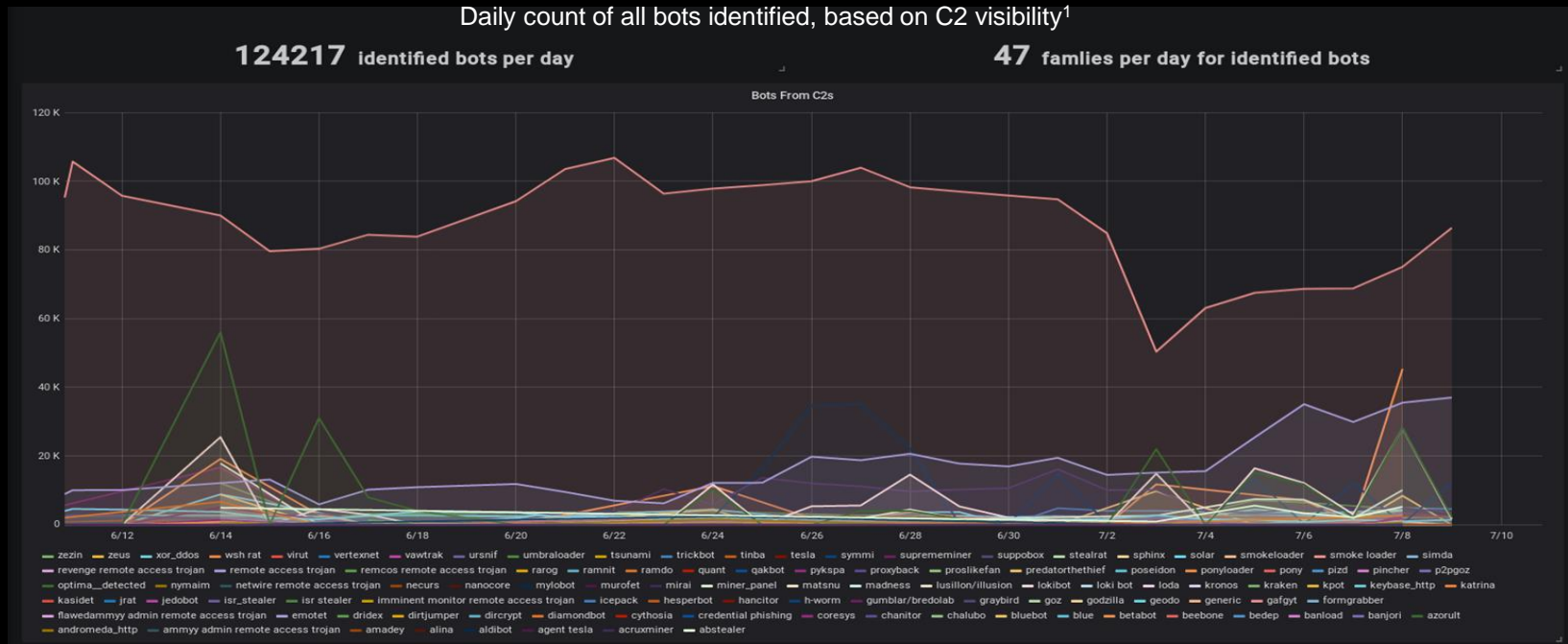46% of businesses say that choosing the right infrastructure to best support each workload is a challenge[2]

49% of businesses have trouble managing multiple clouds[3]

[1] Cloud Vision 2020: The Future of the Cloud, A Survey of Industry Influencers Nov 2017

[2,3] Frost & Sullivan, The Hybrid Cloud Landscape - Perspectives from the 2018 Frost & Sullivan Cloud User Survey, Dec. 2018.
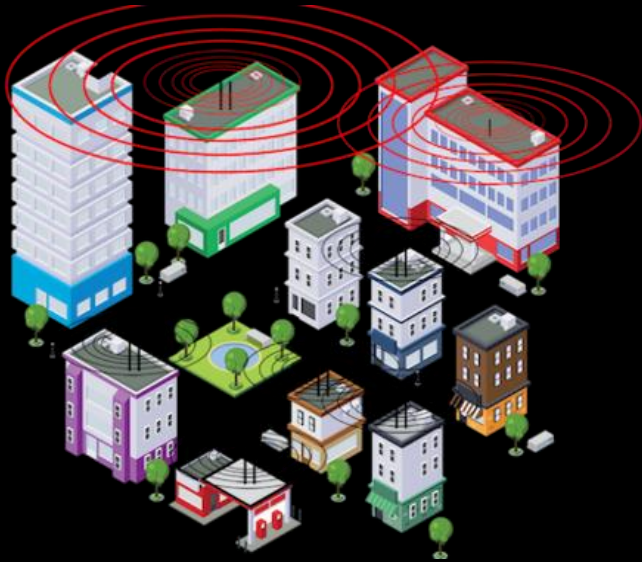
CenturyLink®

Enterprise Security Trends

Digital businesses must quickly detect and deflect malicious activity across highly distributed and evolving environments
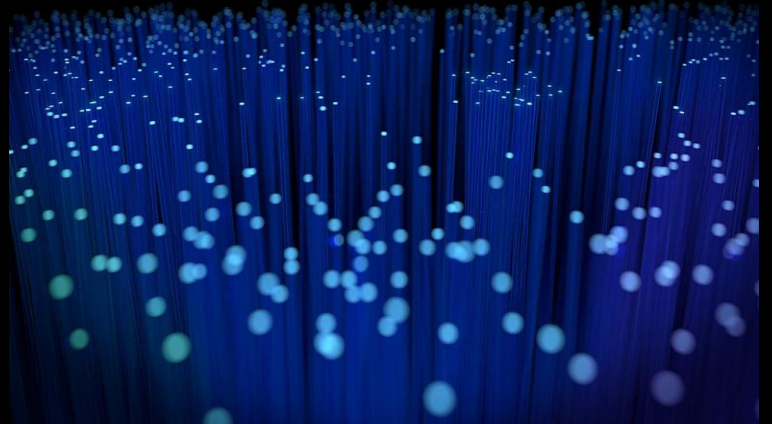
Daily count of all bots identified, based on C2 visibility[1]

124217 identified bots per day

47 famlies per day for identified bots

Bots From C2s

[1] Black Lotus Labs

CenturyLink®

Fiber Densification

Wireless transmission distances are shrinking

Fiber densification supports increased bandwidth and lower latency demands

5G

WiFi 6

Private LTE

LTE

CenturyLink®

Adaptive Networking Customer Outcomes

Adaptive Networking delivers data with greater agility, insight, and control, delivering the following business outcomes:

Greater Agility

- Deep analytics on network performance
- Granular application control over network, access, and security
- Share network assets to deliver greater reliability

91% of businesses with adaptive networking realize up to **29% improved network performance**

Improved Efficiency

- Dynamically scale bandwidth to meet user demand
- Simplified branch connectivity
- Real-time connections from your data center to cloud providers

62% of businesses with adaptive networking experience up to **33% faster deployment of new location**s
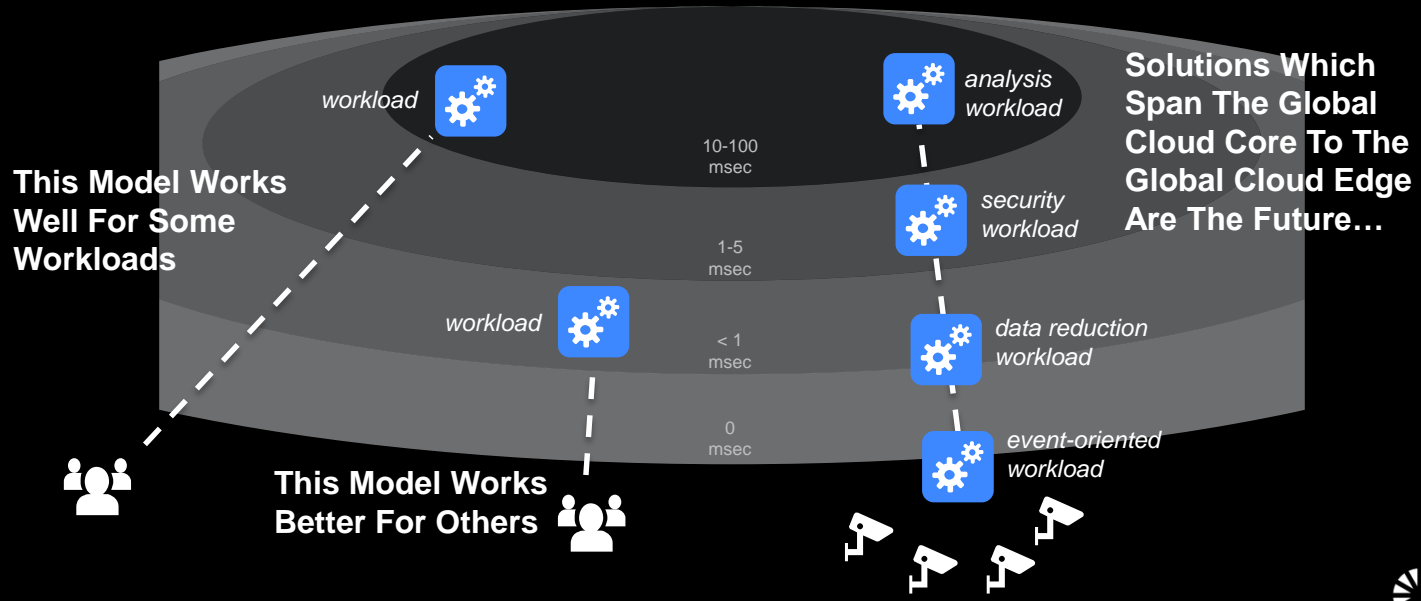
Expansive Protection

- Global threat insight
- Embedded protection of your network assets
- Automated threat response
- Instant insights and expert consultation

79% of businesses with adaptive networking realize up to **31% improved response to multi-layered network security threats**

IDG – CenturyLink Adaptive Networking Market Pulse – Jan 2019

Cloud Edge – The Network is the Datacenter

By 2025, 75% of enterprise-generated data will be created and processed outside the data center or cloud, up from less than 20% today[1].

This Model Works Well For Some Workloads

This Model Works Better For Others

workload

workload

10-100 msec

1-5 msec

< 1 msec

0 msec

analysis workload

security workload

data reduction workload

event-oriented workload

Solutions Which Span The Global Cloud Core To The Global Cloud Edge Are The Future…

[1]- Gartner: "Market Guide for Edge Computing Solutions for Industrial IoT" DocID G00332905

CenturyLink®

CenturyLink®

Questions?

anil.simlot@centurylink.com