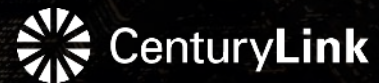# Redescubriendo el valor de la red y el impacto del COVID-19 en los negocios.

Centro Argentino de Ingenieros – July 2020

Ing. Gabriel Holgado

Who is CenturyLink?

We operate one of the world's most **interconnected** networks
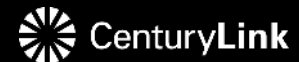
~ 43,000
employees globally
As of Dec. 31, 2019

$22.4 billion
YTD 2019 Revenue

Approx.
450,000
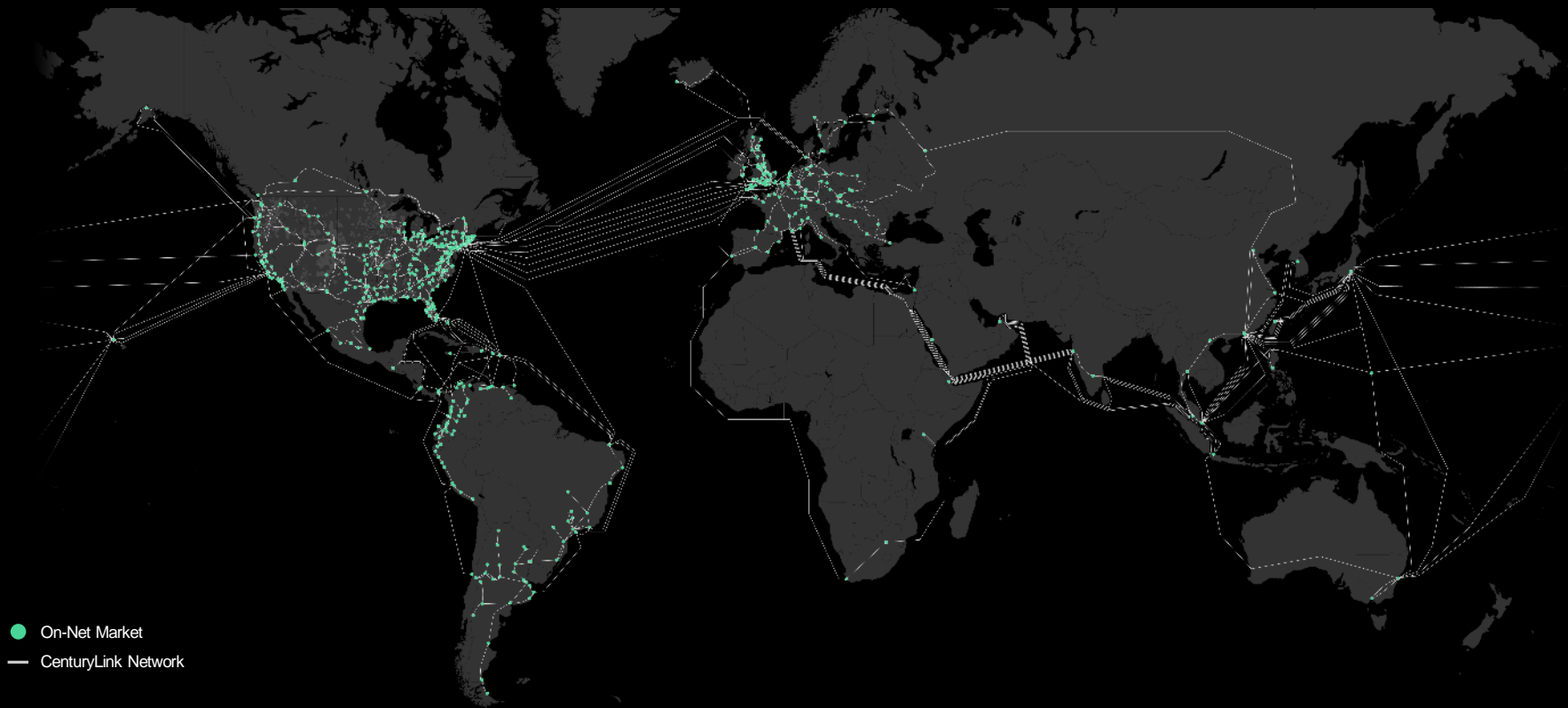global route miles
of fiber

~170,000
on-net
buildings

Provides internet
services to
~4.7M
consumer broadband
customers in 37 states* in NA

*As of 12/31/19

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Global Network Map

On-Net Market

CenturyLink Network

CenturyLink

LATAM Network

LATAM Facts

Presence in 20+ Countries

~31,700 km Terrestrial long-distance + Metro Network

Connects more than 398 cities and towns

~6500km Metro Fiber Route

Local Operations: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, Peru, Venezuela

~26,000 km Long Haul Fiber (Terrestrial)

18 Owned Data Centers

Service reach: Uruguay, Guatemala, Nicaragua, Honduras, El Salvador, Puerto Rico, Dominican Republic, Jamaica, Trinidad & Tobago, Bahamas

48 3rd Party Data Centers

Key Stats – Subsea Network

~36,900 km Subsea Fiber

10.4 Tb/s Total Capacity

16 Owned Landing Stations

5 Subsea Systems (SAC, MAC, PAC, CC, TAC)

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LATAM Regional Data Centers
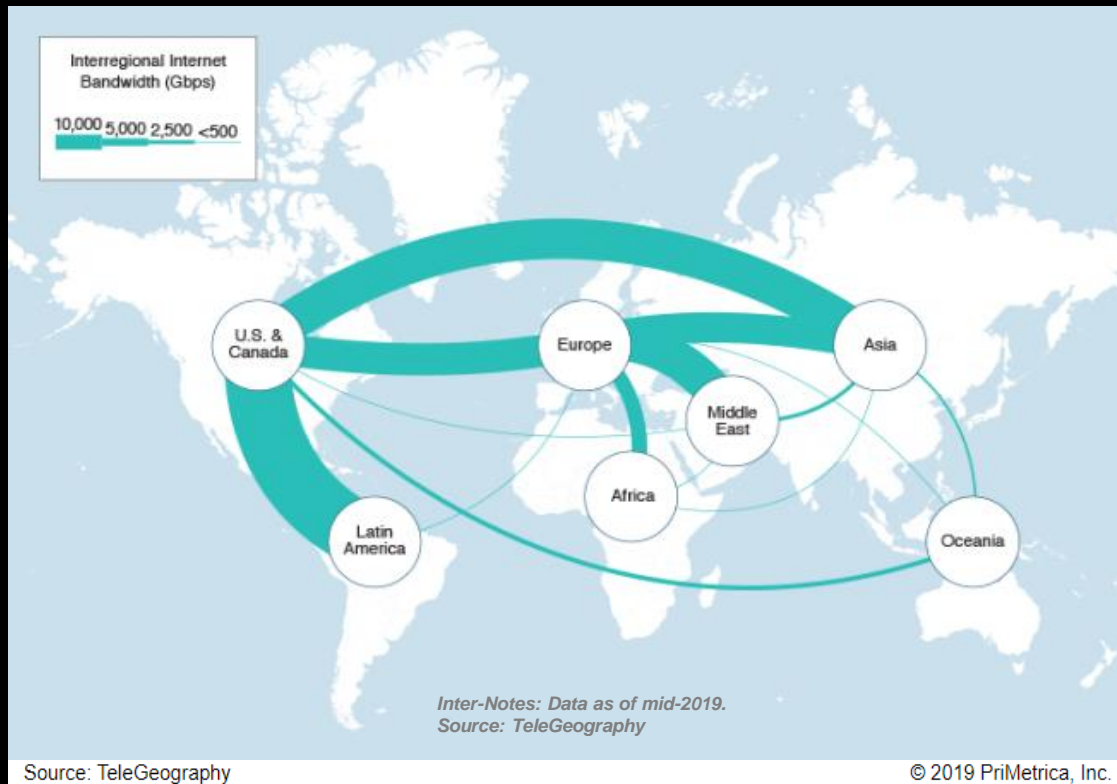
Key Highlights

- **18 Data Centers** with 11,668 sq.m

- **39 MW** of power capacity

- Network Operation Centers **(NOC)**

- Security Operation Centers **(SOC)**

- 48 third party data centers connected

- Dedicated specialists' teams with 24x7 infrastructure support

- Hosting Applications / Managed Security

- Processes and certifications (ISAE 3402, ISO 9001, ISO 20000, ISO 27001, SAP Hosting, PCI DSS, Tier III Uptime Institute)

CDMX MX PAN PAN

Bog / Cali Col

Quito / GYE Ecu

CCS VEN Lima PE

SCL CHI CTBA BR

RJ & SP BR

BsAs / CBA AR

ROS & MDZA AR

We Live in an Interconnected World

Inter-Regional Internet Bandwidth

- **Data** has become the fuel that drives business, innovation, operational efficiency and customer satisfaction.

- **Consumers & Enterprises** of all sizes need to figure out how to manage this flood of information.

- For **Enterprises**, extracting the most important data and use these insights to meet the desires of its customers has become key.

- In 2019, Latin America-U.S. & Canada route, saw an explosion in **bandwidth** demand.

Interregional Internet Bandwidth (Gbps)

10,000 5,000 2,500 <500

U.S. & Canada

Europe

Asia

Middle East

Africa

Latin America

Oceania

Inter-Notes: Data as of mid-2019.
Source: TeleGeography

Source: TeleGeography
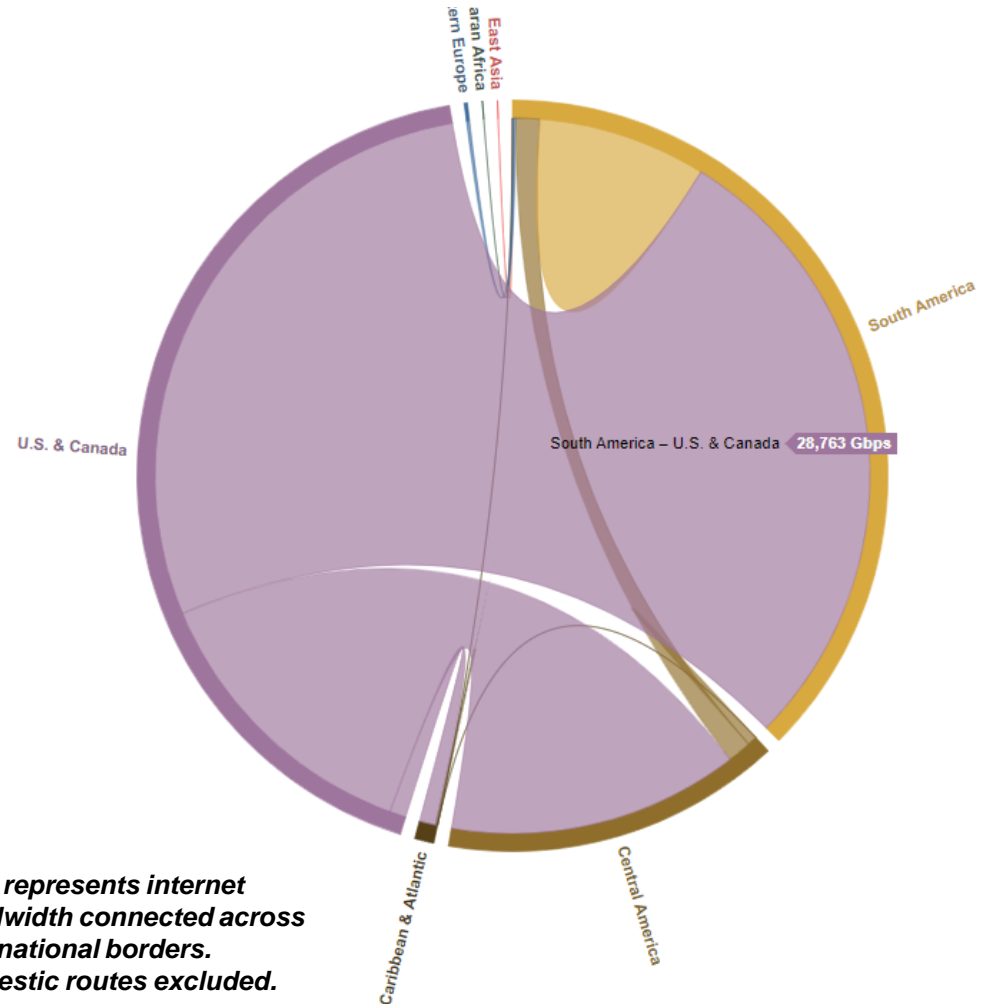
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Latin America & Caribbean International Routes 2019

- South America – US & Canada:

    28,763 Gbps

- Central America – US & Canada:

    13,220 Gbps

- South America – South America:
    7,658 Gbps

- South America – Central America:

    1,082 Gbps

- Caribbean – US & Canada:

    743 Gbps

- Central America – Caribbean:

    1 Gbps

Source: TeleGeography

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Data represents internet bandwidth connected across international borders. Domestic routes excluded.

The New Digital World

Reimagining the network to enable growth

Adaptive Networking

Better connectivity for greater customer engagement

IT Agility & Hybrid Cloud

Deliver apps faster for improved business responsiveness

Connected Security

Gain intelligence into global security threats and proactively safeguard the business

Up to **300%** capacity scaling in real time with customer-defined criteria

Over **2,800** applications identified for policy-based control with SD-WAN

15-25%[1] improved application performance using SDN[1]

Over **2,200** public data centers directly accessible through our network

1.3B+ security events monitored / day by CenturyLink Threat Research Labs

5,000+ known Command & Control (C2) servers actively monitored

# Covid-19…. And now?

The Network, Our *"New Friend"*

- The impact of the global pandemic has made it clear to everyone how important the network truly is.

- The pandemic has created a lot of interest and concern in the network due to the importance it plays in almost every area of our lives

- In **CenturyLink** we have **4 main priorities**:

    - **Employee safety**
    - **Customer safety**
    - **Business continuity**
    - **Community support**

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Traffic Patterns in COVID-19 World

Flexibility is the name of the GAME
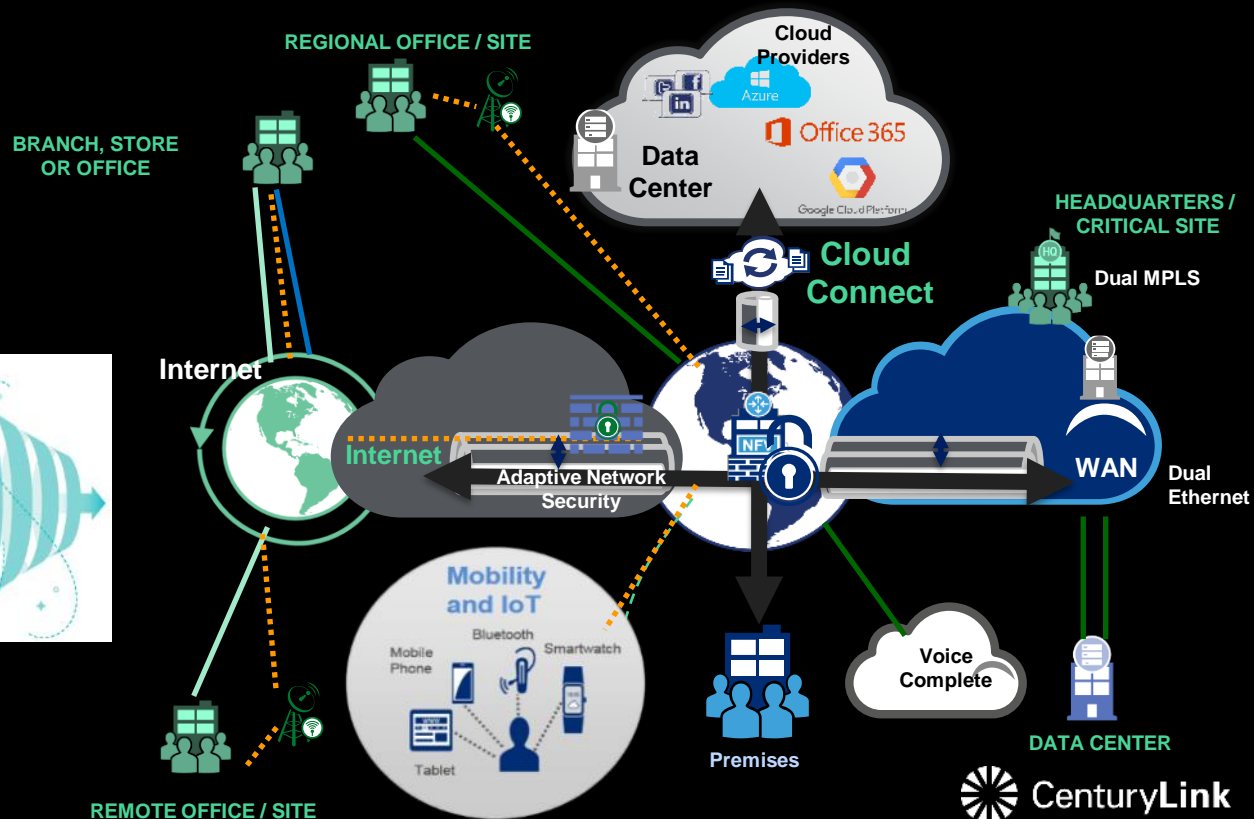
Network and Technology Role in a COVID-19 World

What we´ve learned so far…

- **The impact of COVID-19** on the networks and usage patterns of residential and business users, physically located in their private residences, resulted in **a significant increase in the demand for broadband use and connectivity**.

- The "**Work From Home**" moved the office day-to-day work to the residential environment:

  - New competition for the same resources

  - Increase in the use of videoconferencing, adding to the increase in digital consumption and entertainment

  - Created a big challenge for some network operators.

- **Backbone traffic as well as CDN Traffic has increased significantly**

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Network and Technology Role in a COVID-19 World (cont.)

What we´ve learned so far…

- **Companies around the world didn't become digital overnight because of the pandemic.** The pandemic shows how far along companies have come on their digital journeys.

- COVID-19 created a need for remote connectivity.

- The pandemic expanded a global awareness of a new digital reality and the possibilities that it represents.

- Networks have become smarter and faster, can handle more data, and can leverage new solutions to ensure smooth, latency-free connections.

- Cooperation among telecom players has been key to cope with the impact of the pandemic.

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Network Interconnection, a key aspect re-COVID-19

Increase in digital consumption and entertainment demanded deep peering interconnects to deliver performance

- CenturyLink operates an international IP network capable of handling the growing bandwidth requirements.

- Localized private peering with private interconnects maximizes performance and minimizes latency.

- Allows us to exchange IP traffic in the market traffic originates and terminates

📍 **Peering Points and/or Large Wholesale customers**   📍 **Traditional Peering Points**

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CenturyLink Content Delivery Network (CDN)

Scale

- The CenturyLink Content Delivery Network is in over 100 major metro cities across six continents
- Directly connected to the CenturyLink IP backbone with over 120Tbps of global IP capacity
- Managing over 2.8 million requests per second

Performance

- A specially architected network for high capacity and low latency to handle the most demanding traffic spikes
- Direct connectivity to ISPs without traversing public peering points
- Our optimized caching infrastructure enables an increased availability of your content

COVID-19 impact on CDN Traffic
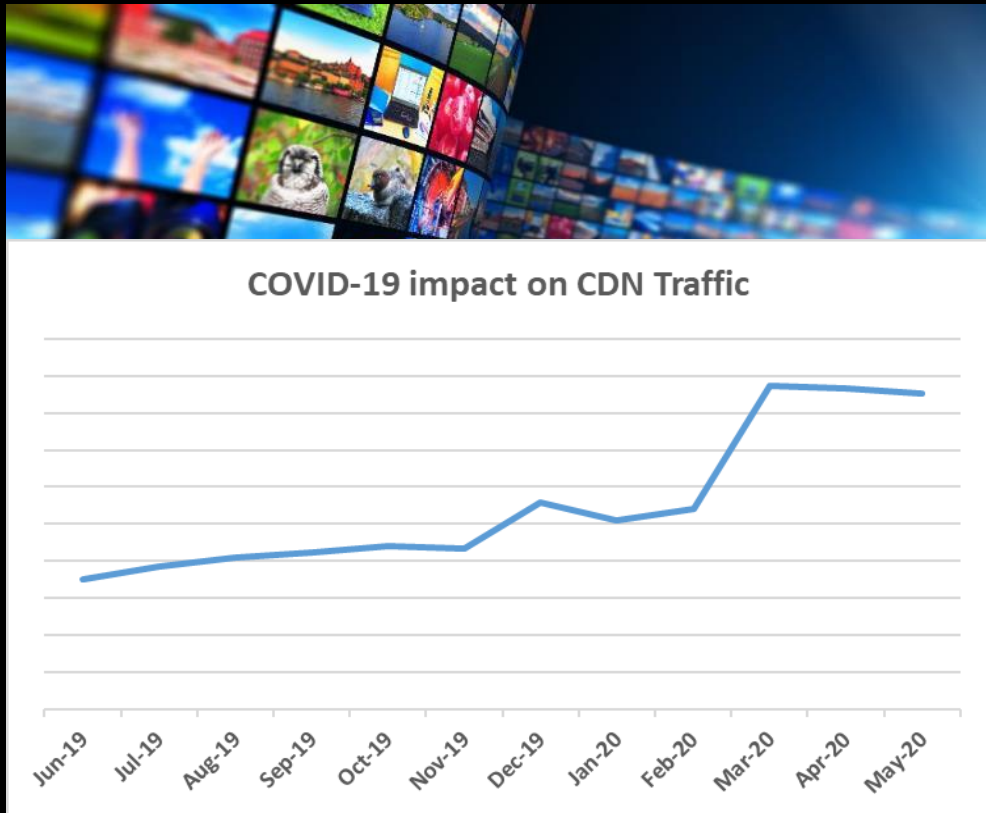
Risk Management in a COVID-19 World

Risk management is top of mind for today's companies

- All business continuity process is under assessment

- Increasing security is as important as meeting rising customer expectations — a high or critical priority for 82% of firms.

- And 86% of IT teams are expected to lead or highly contribute to increased security.

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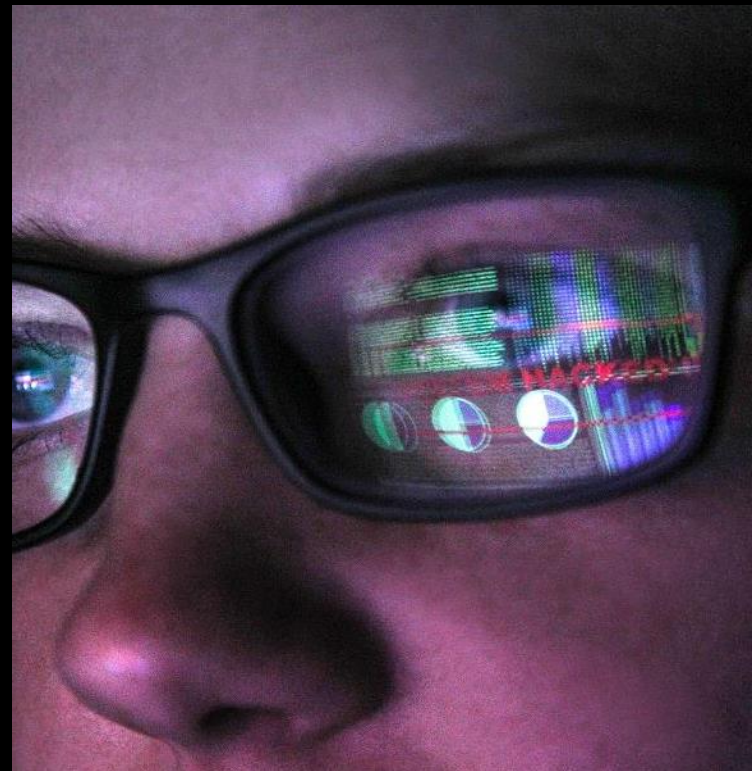
Value and differentiation of our security services

Our Global Network

Global Security Operations Centers

Threat Research Labs

Security from Our Lens

Today, the network is the cybersecurity sensor and the enforcer

- Our global network with 120Tbps of IP capacity plus peering gives us vast visibility into the threat landscape, to help predict advancing threats

- Our 24x7 Security Operations experts -the same teams that protect our critical infrastructure – are working to protect you

- Advanced Security features — Data Loss Prevention (DLP), Sandboxing, Security Information and Event Management (SIEM)

- Our Threat Research experts leverage machine learning to process vast amounts of data to identify precursors of an attack

We **monitor**
~1.3 billion
Security events per day

We **respond** to and
mitigate ~100
DDoS attacks a day

We **monitor** over
94 billion
NetFlow sessions per day

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Evolve the network as business evolves

We're in an era of digital transformation

Applications
moving to cloud

Growing
bandwidth demand

Connect more
devices and things

More reliant
on internet

Expand and scale
to new locations

Increasing
security risk

Respond faster
to business demand

Maximize customer
experience

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Thinking the network as we transform the business

Adaptability is key

- The pandemic expanded a global awareness of a new digital reality and the possibilities that it represents.

- Customers already saw the advantages of migrating to the Cloud. COVID-19 helped make them less hesitant to do so.

- Protect people, data, and infrastructure against the advancing threat landscape

Scalability – Agility – Flexibility,

while maintaining Security

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It was all about human experience anyway

It´s about making connections

- We were changing the way that human beings were interacting with technology long before the pandemic appeared.

- A growing corporate awareness of the value of monitoring employee health and safety will create an exponentially higher demand for more personalized data and networks robust enough to deliver it in real time.

- In some ways, the debate between working from home and working from an office misses the point, because physical locations have become less important than the actual process that leads to the completion of the work.

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Connecting To The Future

"The New Normal"

- **The pieces are already in place to redefine what collaboration truly means**.

- In many cases, people will return to their offices, because they miss being around their colleagues, not because they need to be there to get their work done.

- A human-centric approach to technology will also lead to more customization.

- Customers will look to **telecoms and technology companies to be their partners**, to understand the technology, to anticipate marketplace opportunities, and to provide specific solutions in real time.

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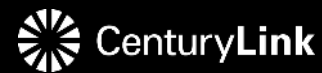
Q&A
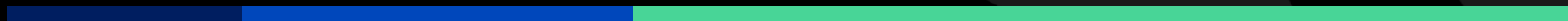
¡Muchas gracias!

Centro Argentino de Ingenieros