Innovating to Adapt to a Post-Pandemic World

Identifying new opportunities to grow revenues and customer satisfaction

Plume®

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Executive summary

Described as the most severe economic crisis since World War II, the COVID-19 pandemic affected almost every industry in all parts of the world. While Communications Service Providers (CSPs) felt relatively few short-term impacts, the long-term implications will require the industry to adapt to a new post-pandemic world.

The International Finance Corporation expects CSPs to face uncertain growth and business development for the foreseeable future.[1] Industry analysts have also downsized previous forecasts and predict slower progress in the number of new subscribers.[2] Consumer spending, in general, is down to the levels of the Great Recession,[3] meaning that—like many sectors—recovery for CSPs will take some time.

Cutting costs will help offset some of the losses incurred due to the pandemic. But cuts only go so far. To emerge successfully from the economic downturn and continue to expand, CSPs must innovate.

New technologies provide some of the best opportunities to gain a competitive edge. This paper explores untapped areas where technology can boost competitiveness. By becoming forward-thinkers, CSPs can greatly improve their customer satisfaction, promote loyalty, and decrease churn rates.

[1] "COVID-19's impact on the global telecommunications industry," International Finance Corporation
[2] "Cable broadband sub growth to slow in 2021—analyst," Light Reading
[3] "Consumer spending pullback similar to 2009-2010," Gallup

The impact of COVID-19 on CSPs

Like many other industries around the world, CSPs felt the extraordinary disruption of the COVID-19 pandemic. With about 20% of the global population under lockdown by the end of March 2020[4]—and even more choosing to work from home—home internet became, for many people, the main connection to the outside world.

The upsurge in broadband demand and the change in usage tested CSPs' ability to maintain quality of experience (QoE).

[4] "Around 20% of global population under coronavirus lockdown," The Guardian

Remote work, school, and play go mainstream

In countries such as the United States—where the peak of the lockdowns impacted 94% of the population[5]—working from home (WFH) and remote school became the "new normal."

DURING THE EARLY DAYS OF THE PANDEMIC IN 2020:

67%

67% of 550 surveyed US employers said they were taking steps to allow WFH for employees who normally worked on site.[6]

42% & 50%

More than 42% of US employees[7] and 50% of European employees[8] worked from home.

73%

73% of 127 countries reported using online platforms to deliver education.[9]

US CSPs saw a 51.1% rise in peak upstream traffic nationally in the first 11 months of the pandemic, compared to 31.8% downstream peak cumulative growth.[10] The difference between upstream and downstream data usage is likely due to the surge in videoconferencing, since videoconferencing apps rely on upstream data.

With businesses and educational institutions embracing this new way of collaborating, videoconferencing providers reported unprecedented gains in the number of new customers, active users, and meeting minutes.

As the pandemic unfolded, the home didn't just become the new office and classroom. It was often the only entertainment avenue available when live events and performances became casualties of social-distancing mandates.

A MARCH 2020 SURVEY BY THE CONSUMER TECHNOLOGY ASSOCIATION FOUND THAT:[11]

26%

26% of consumers surveyed started using streaming services like Netflix for the first time.

31%

31% used online gaming more often.

20%

20% watched gaming livestreams more often.

[5] "An interactive map of the US cities and states still under lockdown — and those that are reopening," Business Insider
[6] "Coronavirus makes work from home the new normal," Society for Human Resource Management (SHRM)
[7] "Stanford research provides a snapshot of a new working-from-home economy," Stanford
[8] "Living, working and COVID-19," European Foundation for the Improvement of Living and Working Conditions
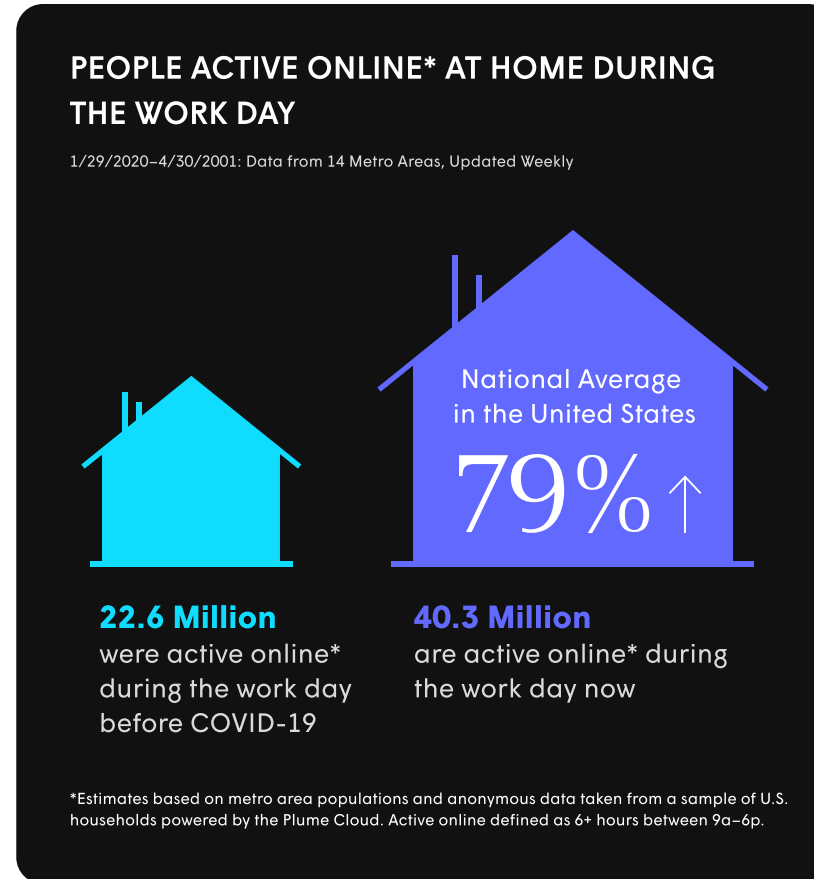[9] "Unequal access to remote schooling amid COVID-19 threatens to deepen global learning crisis," UNICEF
[10] "COVID-19: How cable's internet networks are performing," NCTA (The Internet and Television Association): Last accessed 01/26/2021
[11] "Video Streaming, Contactless Grocery Delivery Use Soars Amid COVID-19 Outbreak, CTA Study Finds," Consumer Technology Association

All these changes in consumer behavior resulted in new home internet usage patterns. In households served by Plume®, three trends began emerging in March, compared to February 2020:[12]

· **More people active online during work hours:** The average number of people online at home during standard working hours has grown by an average of 82% in 14 key US metro areas and 59% in seven Canadian metros.

· **More work and entertainment devices active online:** The US, Canada, and Europe had similar sharp increases in the number of devices for work (computers and mobile devices) and entertainment (smart TVs, set-top boxes, gaming consoles) connecting to the internet.

· **Individuals spending more time online:** The number of hours that computers, mobile phones, and entertainment devices connected to WiFi also grew across the board during the work hours, evenings, and weekends.

PEOPLE ACTIVE ONLINE* AT HOME DURING THE WORK DAY

1/29/2020–4/30/2001: Data from 14 Metro Areas, Updated Weekly

National Average in the United States

79% ↑

22.6 Million
were active online* during the work day before COVID-19

40.3 Million
are active online* during the work day now

*Estimates based on metro area populations and anonymous data taken from a sample of U.S. households powered by the Plume Cloud. Active online defined as 6+ hours between 9a–6p.

Long-term impacts

Even as the world begins to resume normal activities, CSPs need to consider the long-lasting impacts of the pandemic, both on their financial health and on broadband demand.

In terms of economic losses, the International Labour Organization has described the COVID-19 pandemic as the "most severe crisis" since World War II, bringing unprecedented reduction in global economic activity.[13] By April, consumer spending dropped to the levels of the 2009–2010 recession, and 53% of consumers in a Gallup poll expected these reductions to be the "new, normal pattern for years ahead."[14]

Despite the turmoil, the telecommunication industry avoided major economic impact in the short term.

Between February 21, 2020, and March 20, 2020, CSPs only saw a 17% decline in their S&P 500 performance, compared to an overall 31% decline across all sectors, according to the International Finance Corporation (IFC).[15] In fact, some CSPs had an uptick in revenues as broadband demands surged.

Nonetheless, IFC notes that continuous growth and business development in the foreseeable future is uncertain for the sector.

Industry analysts agree. Despite healthy year-over-year growth for the industry in 2020, research firm MoffettNathanson expects US CSPs to see a slowdown in 2021. The firm's analysts revised downward earlier forecasts for new 2021 subscriber numbers.[16]

The cloudy outlook for the recovery in a post-pandemic environment requires CSPs to seek out new opportunities. This means not only finding new ways to boost customer retention and loyalty, but also exploring new, innovative offerings to increase revenue.

[12] "Work from home dashboard," Plume
[13] "COVID-19 and the world of work," International Labour Organization Monitor
[14] "Consumer spending pullback similar to 2009-2010," Gallup
[15] "COVID-19's impact on the global telecommunications industry," International Finance Corporation
[16] "Cable broadband sub growth to slow in 2021—analyst," Light Reading

Focusing on the work-from-home segment

One challenge CSPs will need to address post-COVID is the expected hike in WFH. The soaring remote-work numbers during the pandemic may have been an anomaly, but the effects will linger.

The pandemic pushed the idea of telecommuting into the mainstream. Although the office will not go away any time soon, newfound awareness about the benefits of remote work—both for employers and employees—will compel many companies to permanently adopt remote-work policies.

THE FUTURE OF WORK IS HERE

The phenomenon of telecommuting, or remote work, has been gaining momentum for more than a decade. Buoyed by technology that allows them to work from anywhere, employees saw remote work as a perk that provided better work-life balance.

But many employers have been on the fence. Concerns over productivity, among other things, were barriers to adoption. Some leading technology companies have even reversed course over the years, cutting back their remote workforce.

The COVID-19 pandemic upended the way employees and employers alike viewed WFH.

Consider this:

• 86% of the companies surveyed by Verizon in May 2020 saw "the digital work environment coexisting with the physical workspace of the future," while 78% expected an increase in remote work.

• In a FlexJobs survey, 51% of more than 4,000 WFH employees reported being more productive.

• People working from home during the pandemic had a higher workforce happiness index score, according to a CNBC/SurveyMonkey survey of more than 9,000 workers.

• 83% of 800 employers planned to implement more flexible work policies after the COVID-19 crisis was over, according to a survey by HR company Mercer.

All these numbers indicate that the future of work is here. And remote work will be even more feasible than before for many businesses—as a result of COVID-19, 65% of the world's gross domestic product will be digitized by 2020, International Data Corporation forecasts.

A hybrid work environment will emerge as the new norm after the pandemic. CSPs who respond to this trend quickly will position themselves as leaders.

"Verizon Business report: remote work is here to stay in some form," FierceTelecom
"FlexJobs survey: productivity, work-life balance improves during pandemic," FlexJobs
"90% of employers say working remotely hasn't hurt productivity," CNN
"Who is the happiest working from home? Here's what latest jobs market data says," CNBC
"Working from home was a luxury for the relatively affluent before coronavirus - not any more," World Economic Forum
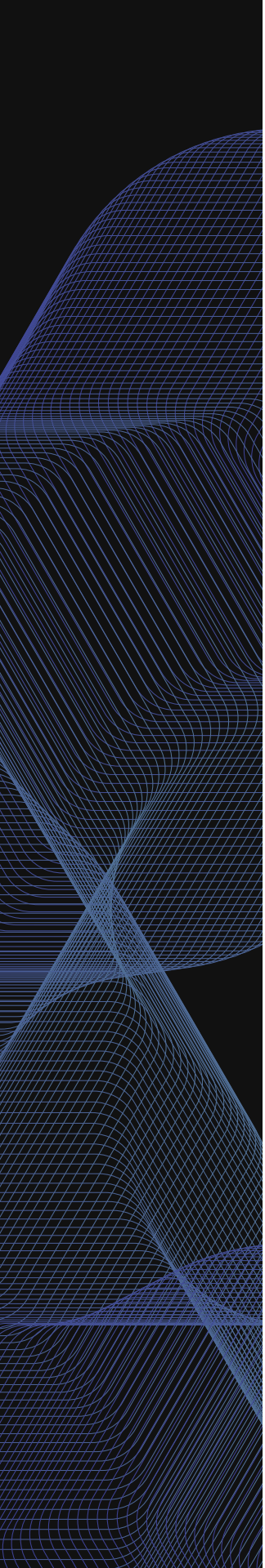
A Frost & Sullivan analysis forecasts a 500% increase in remote workers post-COVID compared to pre-COVID.[17] Consequently, it has adjusted its estimated growth for the videoconferencing market—from a pre-pandemic forecasted compound annual growth rate (CAGR) of 17.2% to 24.6% between 2019 and 2025.

As Plume observed during the pandemic, more devices and people connecting to the home network for longer hours—and consuming more data with activities such as videoconferencing—creates wireless chaos inside the home network. The bigger demand for residential broadband after the pandemic will continue to challenge CSPs' ability to maintain quality service.

[17] "Widespread shift to remote work presents massive opportunities for virtual meeting solution providers," Frost & Sullivan

Improving customer satisfaction

With connectivity becoming a critical factor during COVID-19, CSPs in the United States rose to the occasion. Not only did they handle the bigger loads well, they also shone by signing the Keep Americans Connected Pledge and expanding services to support work from home. And consumers took notice.

The American Customer Satisfaction Index (ACSI) measures annual benchmarks for various industries, based on about 500,000 customer interviews. The 2019–2020 telecommunications index had a 4.8% surge in consumer satisfaction with CSPs.[18]

Historically, however, CSPs rank second-to-worst among 46 ACSI industries. So, despite seeing their first customer satisfaction boost in four years, CSPs continue to rank near the bottom.

To compete in the post-pandemic environment, CSPs must make customer satisfaction a top priority. The first step to improving customer satisfaction is using the right metrics—and this involves a paradigm shift.

[18] "American customer satisfaction index telecommunications report 2019-2020," ACSI

Quality of Service vs. Quality of Experience

Traditionally, CSPs use Quality of Service (QoS) to measure network performance. Typical QoS looks at factors such as throughput and latency and takes into account metrics such as:

· Signal strength

· Data rate

· Congestion and interference

When the load on the network and the number of devices escalate, these metrics no longer tell an accurate story. QoS doesn't take into account the needs of each device, which vary greatly based on the device function.

Compare a WiFi thermostat and a WiFi set-top streaming box as an example. Based on QoS metrics, a customer who receives reliable 1Mbs service for that thermostat is perfectly happy, but not so much when the 4K set-top box receives 20Mbs. Traditional QoS metrics will overidentify IoT devices as needing attention while under-identifying streaming devices.

This discrepancy leads CSPs to focus on the wrong things. They may spend money on additional repeaters, trying to fix the problems related to IoT devices—yet customers will continue to be unhappy with their poor streaming experience.

A different type of benchmark—Quality of Experience (QoE)—goes beyond measuring a network's technical performance to provide a much more accurate indicator of consumer satisfaction. QoE includes the same metrics as QoS but goes beyond.
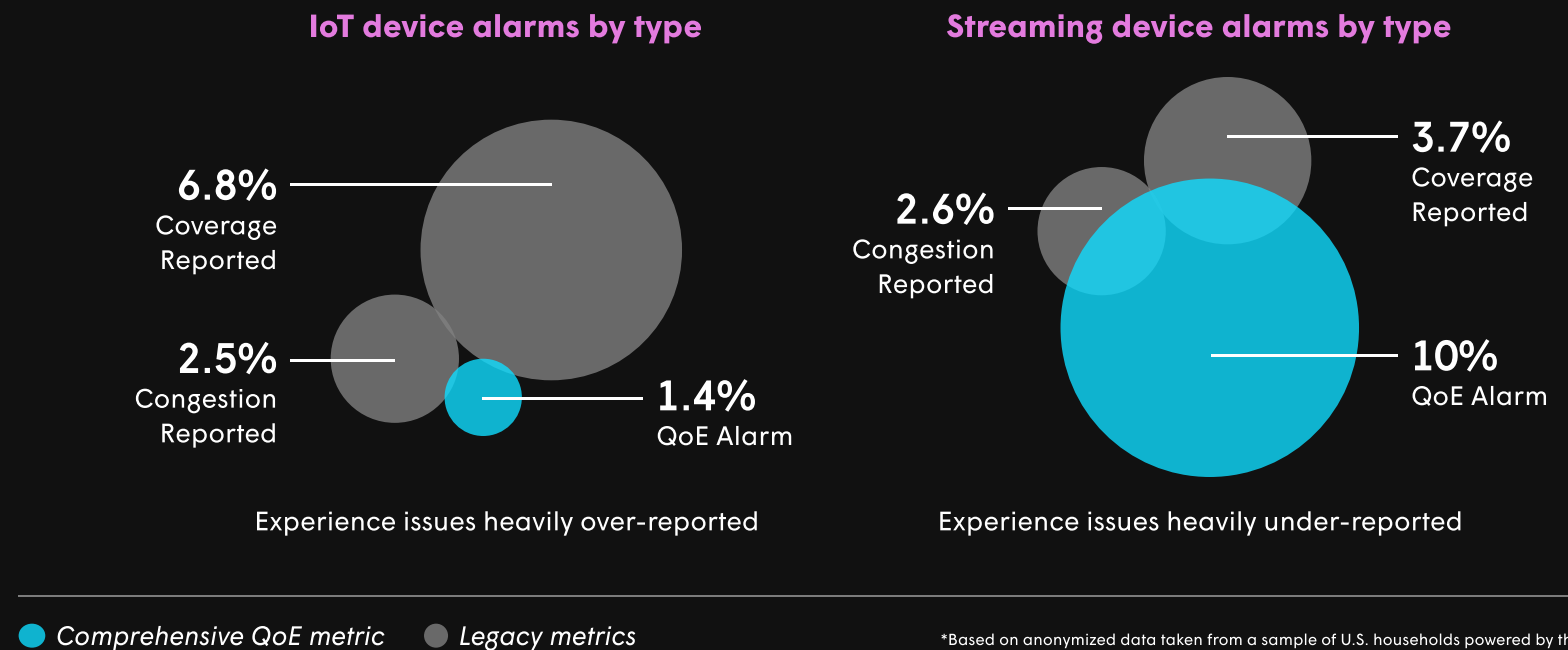
QoE algorithms factor in three categories of metrics:

· **Network conditions:** broadband throughput, packet error rates, interference, topology.

· **Device properties**: type, category, WiFi configuration, historical data usage.

· **Training/learning:** support calls, alarm rates, historical data.

While QoS remains in use for network performance, it's no longer enough. Using QoS in tandem with QoE will help improve outcomes for CSPs.

By taking the difference between QoS and QoE and comparing it against traditional QoS metrics, CSPs could identify poorly performing devices. This enables them to better understand quality of experience from a customer's perspective—and use that data to improve delivery.

STRUGGLING DEVICES IDENTIFIED BY QOS AND QOE*

IoT device alarms by type

6.8%
Coverage
Reported

2.5%
Congestion
Reported

1.4%
QoE Alarm

Experience issues heavily over-reported

Streaming device alarms by type

2.6%
Congestion
Reported

3.7%
Coverage
Reported

10%
QoE Alarm

Experience issues heavily under-reported

● Comprehensive QoE metric   ● Legacy metrics

*Based on anonymized data taken from a sample of U.S. households powered by the Plume Cloud

Providing proactive support

Among the many effects of higher reliance on the home network is the heavier load on customer support. This is especially a concern when consumers spend a significant time on applications like videoconferencing. Not only are customer calls expensive, but they also have a direct impact on customer satisfaction.

Across all industries, consumer expectations for customer service are higher than ever.

ACCORDING TO A 2018 MICROSOFT CUSTOMER SERVICE GLOBAL SURVEY:[19]

95%

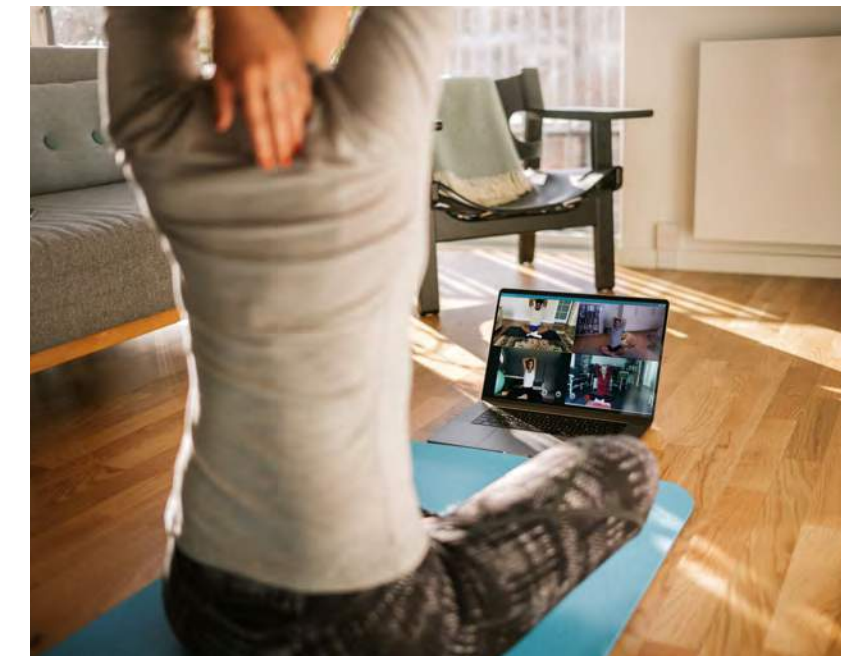*95% of consumers cited customer service as important for their choice of and loyalty to a brand.*

61%

61% of consumers stopped doing business with a brand due to poor customer service.

59%

59% of respondents had higher expectations for customer service than in the previous year.

For CSPs, customer support was already a weak spot prior to COVID-19. On the ACSI 2019–2020 index, call-center satisfaction ranked at the bottom of 14 criteria for CSPs—with just 1% improvement between 2019 and 2020 (from 60% to 61%).[20] Additionally, CSP call centers scored the lowest among all telecom provider categories. There's clearly much room for improvement.

[19] "State of global customer service report," Microsoft
[20] "American customer satisfaction index telecommunications report 2019-2020," ACSI

Predicting customer need with machine learning

In the Microsoft survey,[21] 70% of consumers said they had a more favorable view of a brand that provided proactive customer-service notifications. Many industries are innovating in this area by using machine learning—and this is an opportunity for CSPs to optimize their customer support.

Machine learning uses algorithms and pattern recognition to learn from data and make predictions. With machine learning, CSPs can predict which customers are most likely to call during certain time periods, and apply that data to proactive customer support.

Some ideas for proactive support include:

- Sending preventative emails.

- Performing direct, proactive maintenance and care.

- Understanding what drives the customer service calls.

Recently, in a North American deployment, Plume demonstrated the results of using machine learning to identify likely callers, compared to the list of actual callers over the next seven days. To identify the customers most likely to call, Plume trained machine-learning models using factors such as:

- Performance of the home network.

- User behavior (for example, apps used).

- The number and type of devices connecting to the network.

While machine-learning predictions are not perfect, they are quite accurate. The algorithms can also be adjusted to trade off precision for recall. Here's what calling likelihood ratio vs. the percentage of callers captured looked like with Plume's machine learning:

- If a broader list is desired, a list of customers 5x more likely to call in the next seven days than the average customer can be created, and it will contain 80% of the customers who actually call.

- If the list is narrowed to include people 10x or more likely to call than the average customer, 60% of the customers who actually call will be on the list.

- The trend can be continued, creating a list of customers that are 20x more likely to call than a typical set of customers, at which point the list contains 20% of the people who will actually make a support call.

CSPs can gain two main benefits from predicting customer needs and taking action: cutting costs and improving customer satisfaction. Cost-cuts will be especially important as CSPs emerge from the pandemic fallout. But delivering proactive support does more than optimize and save on customer service costs. Just as important, proactive support is an opportunity to differentiate—and reduce customer churn.

21 "State of global customer service report," Microsoft

Identifying new revenue streams

During the pandemic, several CSPs quickly added new offerings to cater to the WFH broadband demand. Others were also considering future upgrades. Some examples:

- Cox Business launched new WFH packages that provided enterprise-grade connectivity and security features.

- AT&T announced a "home office connectivity" service with symmetrical speeds of 1 Gig.

- Comcast and others were considering deploying SD-WAN (software-defined wide-area network) to enable WFH (as well as "work from anywhere").

Premium services such as these are one way to make up for profit losses stemming from the COVID-19 pandemic. While these types of new packages are responsive to the new remote work trends, they may not provide enough differentiation for maintaining a competitive edge.

CSPs need to think outside the box about their premium services and go beyond connectivity packages. Technology makes innovation possible—and CSPs that don't embrace new technology are more likely to fall behind.

Innovative idea: WiFi motion detection

One untapped area of opportunity for CSPs is the smart home. Consumers are embracing smart home devices for everything from physical security and healthcare to energy savings. WiFi motion detection is an innovative idea that can be applied for each of these use cases.

Market Size

11.6% CAGR

$135.3B
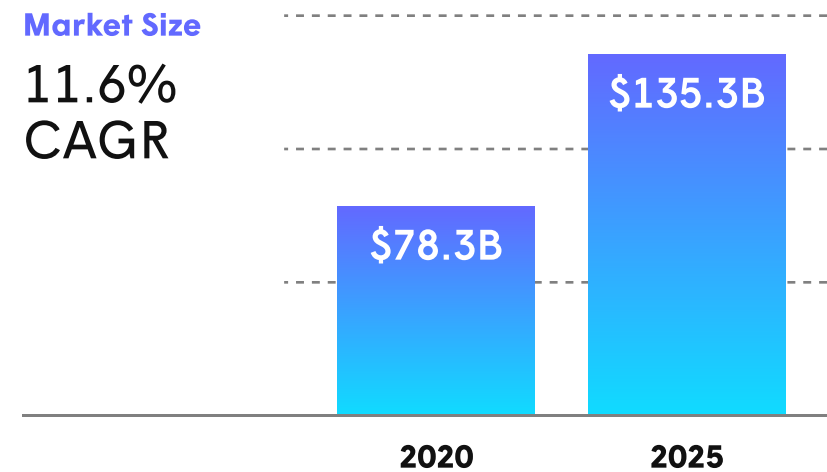
$78.3B

2020   2025

The global smart home market size will expand at a 11.6% CAGR between 2020 and 2025 (from $78.3 billion to $135.3 billion), according to forecasts by research firm Markets and Markets.[22]

What is WiFi motion detection?

WiFi motion detection uses the in-home network's WiFi radio waves to detect motion in different areas of the home. The technology relies on measurements about the WiFi transmissions observed and reported by the APs in the home.

Applications could include:

- Sending alerts when someone enters a room or when unexpected movement occurs inside the home.

- Sending alerts when there's lack of expected movement such as in the case of elderly family members at home.

- Automating certain actions such as turning on air-conditioning or lights when someone returns home.

- Detecting motion in areas where video cameras aren't used due to privacy concerns (such as bedrooms and bathrooms).

[22] "Smart home market with COVID-19 impact analysis," Markets and Markets

How could CSPs benefit?

WiFi motion detection uses the in-home network's WiFi radio waves to detect motion in different areas of the home. The technology relies on measurements about the WiFi transmissions observed and reported by the APs in the home.

Applications could include:

Home security: Home-security monitoring was the third most-popular type of product or service in the smart home market in 2019.[23] Nonetheless, concerns about privacy prevent many consumers from installing security devices. More than 50% cite not wanting to be recorded in their homes as the main reason for not using a surveillance video camera.[24]

That's where WiFi motion sensing comes in. The privacy concerns are far lower, and homeowners can still receive alerts when there's unexpected movement inside the home.

Elder care: The estimated value of the market for connected solutions for seniors will reach $30 billion by 2020, with safety and smart living—the leading category—to triple to $17 billion.[25] The installation and maintenance of smart technologies, however, is a big concern.

In elder care, WiFi motion detection could be used in a way that's opposite from home security applications. When lack of motion is detected during the appropriate times of day, the caregiver would receive an alert and act accordingly.

Home-energy management: Lowering utility bills is one of the reasons consumers use smart technology, and 15% say it's the main reason for purchasing a smart home device.[26] With WiFi motion sensing, customers could set their smart air-conditioners or lights to turn on when they arrive home, and turn off when they depart, managing their energy consumption more efficiently.

These are only some of the scenarios that CSPs can leverage for premium services. As WiFi motion detection technology continues to develop, many future possibilities will emerge. Consumers will continue to embrace smart home devices for convenience and safety—and providers can gain an edge by responding to this trend.

[23] "Smart home market: Nearly 27% growth projected in 2019," Digital Media Solutions
[24] "Home security sentiments," porch.com
[25] "Booming tech for boomers," AARP
[26] "16+ smart home statistics on ultimate home protection," Hippo Insurance

Moving forward by innovating

When faced with catastrophes and economic turmoil, the communications services industry has traditionally demonstrated resiliency. The COVID-19 pandemic will be no different.

But what makes the pandemic unique is that the world will not return to "business as usual." Successful recovery following this global event will take more than simply weathering the effects. CSPs will need to adapt to a new world by thinking proactively and innovating.

Moving forward requires CSPs to improve their customer experience, demonstrate their commitment to customers, and create new revenue streams. New technologies can help accomplish all these objectives and providers who embrace these new technologies will rise to the top.

To learn more about Plume, visit our website or contact us today.