



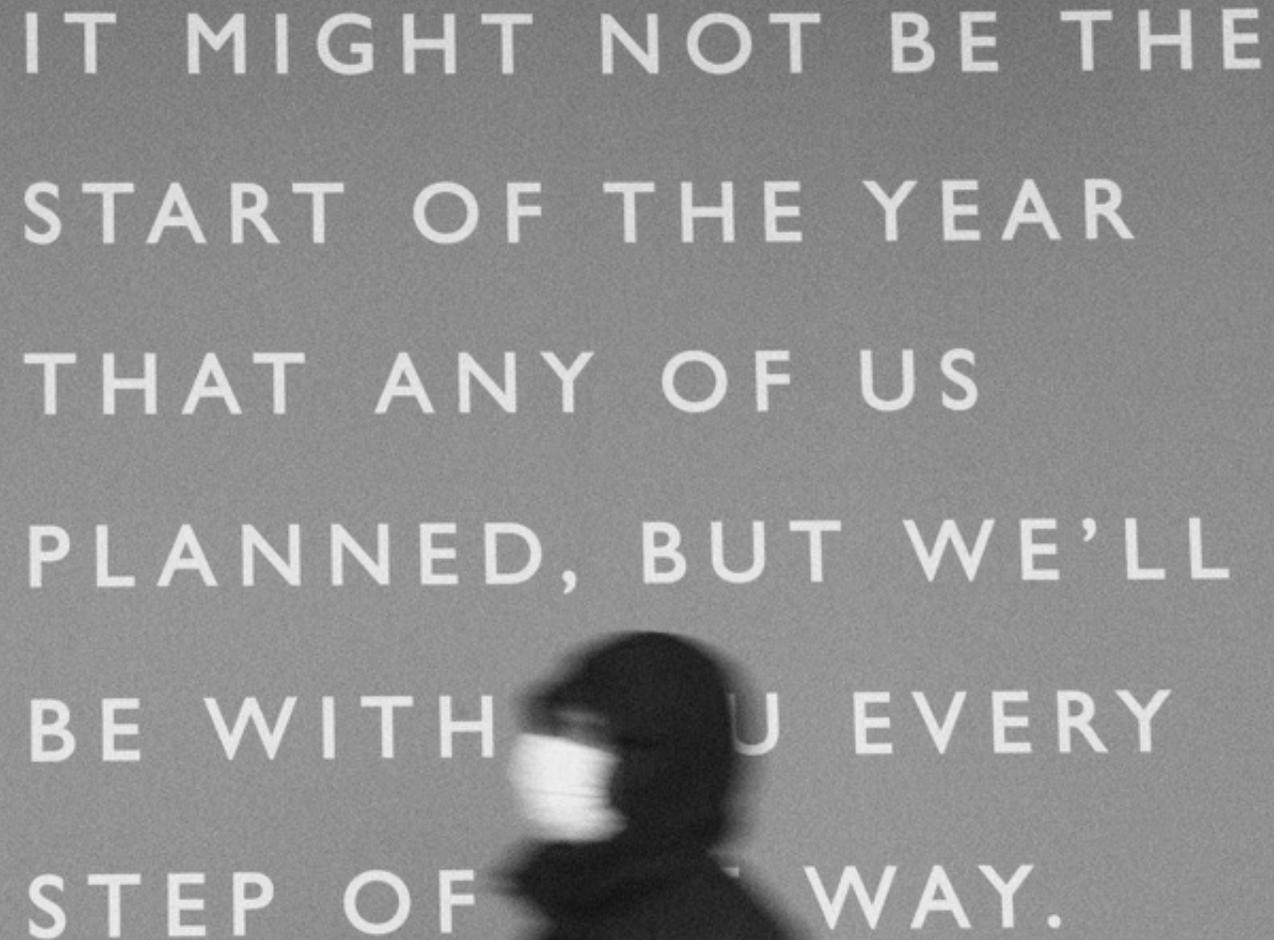
2020 NETWORK REPORT



OVERVIEW

As the world approaches the one-year anniversary of widespread pandemic stay-at-home activities, 2020 traffic patterns reveal a sharp traffic surge in March and April, followed by a transition into a more typical – although still elevated – growth trend throughout the balance of the year.

In this report, Comcast details its 2020 network data, showing that years of strategic investment, combined with advancements in network software, were among the principal factors that allowed its network to perform at such a high level throughout a year marked by historic growth in Internet usage and demand.



IT MIGHT NOT BE THE
START OF THE YEAR
THAT ANY OF US
PLANNED, BUT WE'LL
BE WITH YOU EVERY
STEP OF THE WAY.

62%

of employed Americans say they have worked from home during the crisis, a number that has doubled since March, according to a Gallup poll.

93%

of people in households with school-age children reported their children engaged in some form of distance learning, according to U.S. Census data.

80%

of people living with children distance learning reported the children were using online resources, according to the same U.S. Census study.



INVESTMENT

We've built a powerful network with a simple purpose: keeping customers connected — *always*.

Throughout 2020, Comcast continued to deliver above-advertised speeds to customers across the country, including in areas most affected by COVID-19. The remarkable performance of the network during this time can be attributed to outstanding work by engineering and care teams, key technology innovations, and billions of dollars in strategic investment for many years before the pandemic began.

\$15 billion

in investment since 2017, which has allowed our network to manage historic highs in demand.



TRAFFIC

2020 was historic. In the span of 4 months in the wake of pandemic lockdowns, Comcast's network experienced almost 2 years worth of traffic growth.

↑ 20-80%

Increase in **gaming downloads**, depending on new releases.

↑ 20-40%

Increase in **video streaming**.

14x

Despite the growth in upstream traffic, traffic patterns remained highly asymmetrical, as downstream traffic volumes were 14x higher than upstream traffic volumes throughout 2020.

1 trillion

For the first time ever, as Comcast customers surfed, streamed and emailed more than ever before, they generated more than a trillion Internet requests (DNS lookups) each day.

Peak downstream traffic increased approximately 38 percent over 2019 levels and peak upstream traffic increased approximately 56 percent. Peak Internet traffic rose 32 percent over pre-pandemic levels, and over 50 percent in some markets in March.

↑ 38%

Downstream

↑ 56%

Upstream

• 39,153 route miles of fiber

Added to the network from 2017-2020, and we've made thousands of capacity augments from the core of our network all the way down to individual neighborhoods.

• 30+ million

The number of high-speed Internet customers served by our network.

• 2x

We've doubled our network capacity every 2.5 years to stay well ahead of demand.

CONTENT

Video is still the one: Notwithstanding the move to remote work and school in some locations, video streaming continued to be by far the biggest driver of traffic on our network. Here's a breakdown of what we deliver through our internet network most.

■ Video ■ Online Games ■ Web Browsing ■ Software Updates ■ Other

2018



2019 (+29%)



2020 (+38%)



71%

71 percent of all downstream traffic is video, making it the top driver of network traffic, and growing by 70 percent over 2019 levels.



NETFLIX
prime video
YouTube
peacock
Disney+
hulu
apple tv+
HBOmax

5%



Despite growth in **videoconferencing** traffic, it still only accounted for less than 5 percent of overall network usage.



SMART SOFTWARE

Comcast engineers built multiple new smart software platforms – powered by artificial intelligence and machine learning – that can detect and fix problems before they affect customers. One of those software platforms, **Comcast Octave** – the completion of which was dramatically accelerated by Comcast engineers in response to the pandemic.

Comcast engineers have developed multiple artificial intelligence and machine learning technologies that make the network faster and more reliable. Comcast's Smart Network Platform automates many core network functions and dramatically reduces both the number of outages and how long they last.

50 million

Comcast Octave automatically optimizes the performance of 50 million devices across the Comcast network every 20 minutes.

+36%

Comcast Octave increased upstream capacity by up to 36 percent, right at the time when traffic levels began to surge.

LIFE AT HOME



Americans are now spending more time at home than ever before. While working and educating virtually, connecting with friends and family online, and establishing new screen time rules, we are now focused on keeping both our families and our devices safe. Overall, the most consistent Internet trend we saw in 2020 can be described in one word: more. But even as our customers did more of everything online, other interesting patterns emerged.



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The Internet was a bright spot during the darkest hours of 2020, keeping hundreds of millions of people connected to work, school, entertainment, and most importantly, each other.

● **TONY WERNER**

President of Technology, Product, Xperience
Comcast Cable

87 million

The number of times parents used the Xfinity xFi pause/unpause feature, temporarily halting their kids' WiFi access. In addition, more than 400,000 parents set xFi content filters for their children.

6 billion

The number of cyber threats xFi Advanced Security blocked in 2020 alone, almost one threat per person on Earth.

22 billion

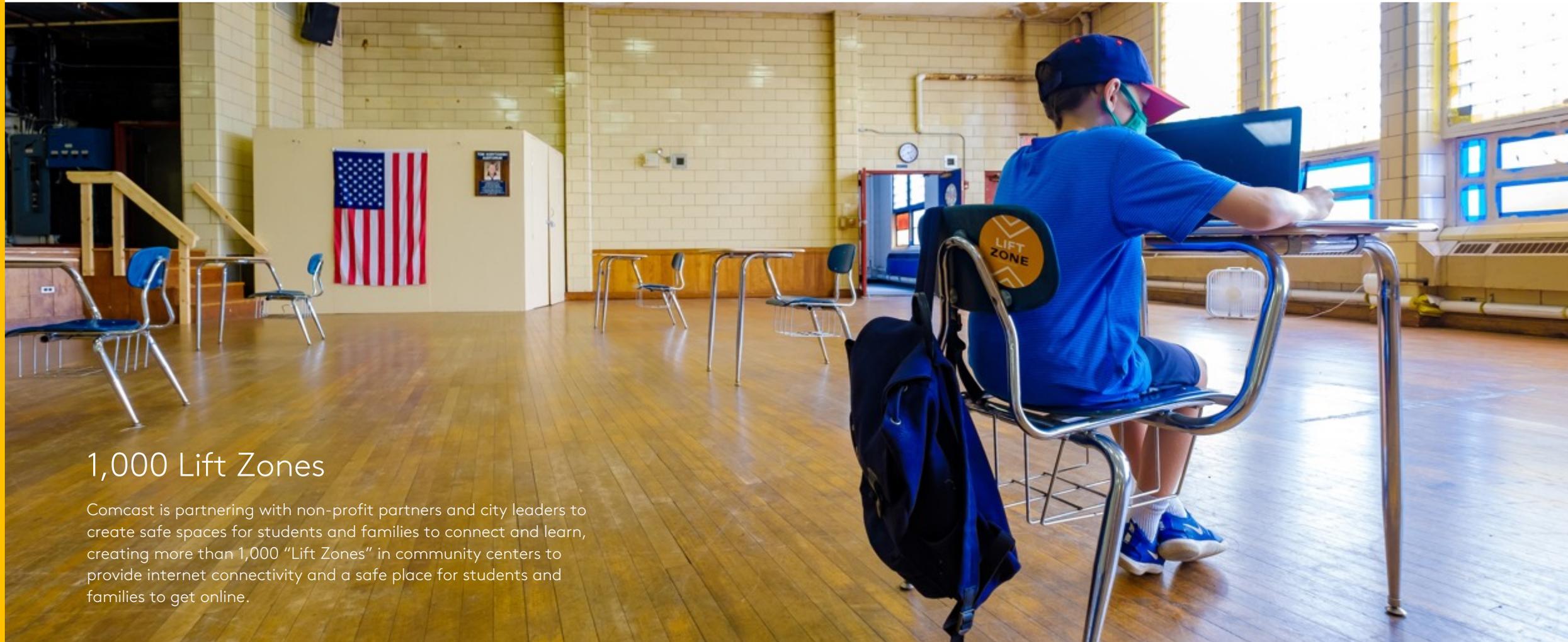
Last year, we hosted more than 22 billion sessions on Xfinity WiFi – that's enough sessions to connect every single person on the planet nearly 3 times.

VIRTUAL EDUCATION

Thanks to a decades-long global commitment to investing, building and evolving technology to meet the needs of our most-demanding customers and capable of meeting unexpected challenges, the Internet became one of our greatest sources of strength in 2020. For us, that strength meant that we were able to lean in to programs like Internet Essentials and the launch of our new Lift Zones.

4 million

The need for digital equity is more important than ever. Comcast has connected more than 4 million students from low-income homes to low-cost, high-speed internet.



1,000 Lift Zones

Comcast is partnering with non-profit partners and city leaders to create safe spaces for students and families to connect and learn, creating more than 1,000 "Lift Zones" in community centers to provide internet connectivity and a safe place for students and families to get online.

2021 & BEYOND

And as excited as we are about how our network performed in 2020, we have no plans of slowing our work to evolve our technology in 2021. Stay tuned in the coming months as we share new advancements in ultra-fast 10G technology, machine learning for even greater network resiliency, and customer-facing tools that make the broadband experience simpler, faster, and more secure.

