The Global Internet
Phenomena Report
COVID-19 Spotlight

**May 2020**

## A word from Lyn Cantor, CEO, Sandvine

Sandvine is a global leader in the network intelligence market segment. Our customer base represents over 500 global network operators (fixed, mobile, satellite, and WiFi) and our solutions touch over 2.5 billion internet subscribers worldwide.

The COVID-19 worldwide pandemic has drastically affected network usage around the world, with many operators experiencing 100% growth in traffic volume as usage shifts from enterprise and education networks to primarily consumer broadband networks.

During times like these, broadband networks are a consumer's information lifeline. They use it to keep up-to-date on the news – locally, nationally, and internationally. They use it now to stay in touch with their family and friends through social networks and messaging applications. They use it for online gaming and video streaming to keep themselves entertained when they are bored and cannot go to the places that they usually do. And most importantly, for many consumers, they are now using it to work and learn as a replacement for office and school activities – so it is a critical part of their daily lives beyond having fun and being social.

We want to ensure that network operators can continue to deliver high quality internet services that consumers depend on during these times, and this report is our contribution to the network industry during these times of change.

We hope you will enjoy the report and that it helps you get a better understanding of the changes that are ongoing due to COVID-19. If you have any suggestions or questions, please feel free to email: phenomena@sandvine.com.

**Lyn Cantor,**
**CEO, Sandvine**

## Welcome to the COVID-19 Internet Phenomena Spotlight

**This is not a normal Global Internet Phenomena Report. However, I think it is one of the most important ones that we have ever done, because now more than ever, network operators not only need data to understand the changes that are occuring on their network, but also to understand the underlying reasons and the long-term impact.**

During this global event, we saw traffic that we use for the Global Internet Phenomena Report grow over 40% during a two and a half month period – which is unprecedented on a global scale. This report will discuss the underlying causes for that growth, and how this will affect network operators worldwide. Just as important, this change is likely to have long-lasting impact on consumer behavior, and network operators need to prepare for multiple options on the "new normal" network steady state – some that their current network can handle, some that it may not be able to handle.

It is important to note that even at 40% growth, Netflix, Amazon, YouTube, and even the PlayStation Network voluntarily reduced their default resolution and download speeds during the global event. If consumers "go back to normal" and suddenly video traffic is 3-5x (HD) or even 25x (4K) – will networks break?

This is why, in addition to global data, we release regional data. If you are in Asia, your network will act differently than the US. We want to give you the data that is relevant for your network planning or just because you are the curious type – like I am! If you're an OTT content provider and have an application you want covered in the Phenomena Report, click here.

**Cam Cullen,**
**VP of Marketing, Sandvine**

## About the Global Internet Phenomena Data

The data in this edition of the Global Internet Phenomena Report is drawn from Sandvine's installed base of over 500 fixed, mobile, and WiFi operators worldwide. The report does not include significant data from either China or India, but the data represents a portion of Sandvine's 2.5B subscribers installed base, a statistically significant segment of the internet population.

This edition combines fixed and mobile data into a single comprehensive view of internet traffic across all network types. The volume of traffic on the internet is dominated by fixed-line networks, so even though this report includes mobile and WiFi data, the trends on fixed networks dominate traffic share.

Within each section, Sandvine measured the global traffic share for applications from several different perspectives:

**Downstream:** this is the traffic volume downloaded from the internet. Examples would be a video stream, a file download, or an app download from the iTunes store.

**Upstream:** this is the traffic volume uploaded to the internet. It could be requests for content, an interactive messaging session, or a Twitch stream of a gaming session from a console.

**Connections:** this represents the number of conversations occurring for an application. Some applications use a single connection for all traffic, others use many connections to transfer data or video to the end user.

## Section 1: Global News

**HIGHLIGHTS IN THIS EDITION**
A brief overview of some of key findings in this issue of the COVID-19 Global Internet Phenomena Report.

**EXECUTIVE OVERVIEW**
Total traffic grew by almost 40% during the global stay-at-home period. Why did traffic grow so much and how was this reflected in usage patterns in the home?

**GLOBAL APPLICATION CATEGORY TRAFFIC SHARE**
With traffic growing across the board, what applications grew the fastest, outpacing their rivals for attention? Video, Gaming, and Social Sharing lead the way as the critical consumer applications during the COVID-19 pandemic.

**GLOBAL APPLICATION TRAFFIC SHARE**
Who is the king of the internet (at least from a bandwidth perspective) in the new world? This pandemic gives us a unique view, with the majority of traffic concentrated on fixed-line networks, and a chance to really understand what applications are driving consumer broadband usage.

## Section 2: Regional News

**AMERICAS: TOTAL TRAFFIC SHARE**
What video services lead the way in the Americas? Bet on Netflix.

**TIER 1 FIXED: TOTAL APPLICATION TRAFFIC SHARE**
How do large fixed networks differ from the aggregated global numbers? With more bandwidth, is there more video than on the average network?

**EMEA: TOTAL APPLICATION TRAFFIC SHARE**
Europe was the furthest along in adapting to the COVID-19 pandemic in this report period - is their traffic pattern different than other regions?

**TIER 1 MOBILE: TOTAL APPLICATION TRAFFIC SHARE**
There is still traffic on mobile networks, but less than normal as consumers use WiFi at home. Does that change the traffic mix from the 2020 Mobile Internet Phenomena Report?

**SPOTLIGHT: ZOOM**
Zoom was all over the news as the darling of the pandemic. How did it grow and where is it now?

**APAC: TOTAL APPLICATION TRAFFIC SHARE**
APAC is always a YouTube and Facebook-centric region – will that hold during this report?

**SATELLITE: TOTAL APPLICATION TRAFFIC SHARE**
Satellite broadband is the primary access method for many rural consumers. How did those networks fare during COVID-19?

## Section 3: Spotlights

**SPOTLIGHT: STREAMING VIDEO TRAFFIC SHARE**
What are the Top 10 video services worldwide? Can Disney+ crack the list despite not being available worldwide?

**SPOTLIGHT: GAMING TRAFFIC SHARE**
Games are popular during the pandemic. Which ones are leading the pack? What about cloud gaming?

**SPOTLIGHT: SOCIAL NETWORKING TRAFFIC SHARE**
We know Facebook properties are the lead, but there is a world beyond Facebook – who stepped up during the pandemic?

**SPOTLIGHT: MESSAGING TRAFFIC SHARE**
Can Skype retain their leadership during a time when mobile messaging is all over home broadband and social messaging is on the rise?
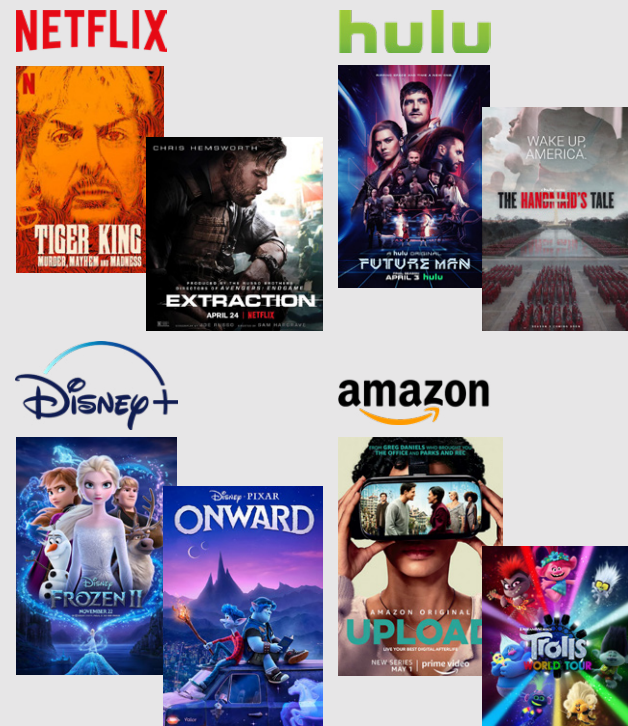
**INFOGRAPHIC COLLECTION AND RESOURCES**
Want to use some of this data? We have a handy collection of resources to simplify re-use of the data in the Phenomena Report, as well as links to more information if you have questions for us.
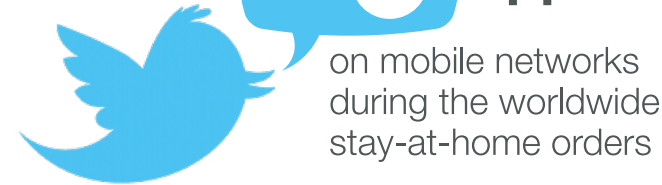
# Highlights in this edition

**Current Internet Traffic**

VIDEO GAMING SOCIAL ~80%

Everything Else ~20%

**Popular Shows During Pandemic**

NETFLIX

hulu

TIGER KING
MURDER, MAYHEM AND MADNESS

CHRIS HEMSWORTH
EXTRACTION
APRIL 24 NETFLIX

FUTURE MAN
APRIL 3 hulu

WAKE UP, AMERICA
THE HANDMAID'S TALE

Disney+

amazon

Disney
FROZEN II
NOVEMBER 22

Disney·PIXAR
ONWARD

UPLOAD
NEW SERIES · MAY | prime video

TROLLS
WORLD TOUR

**Twitter is the #8 global application**

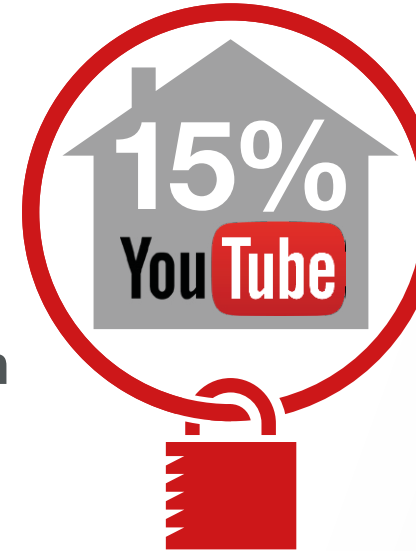on mobile networks during the worldwide stay-at-home orders

**11% OF GLOBAL TRAFFIC IS NETFLIX**
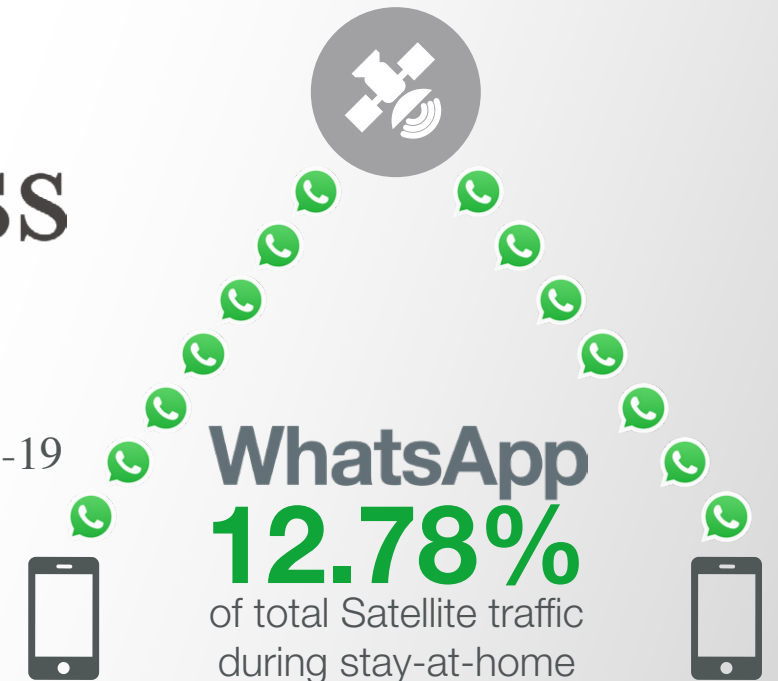
during the worldwide stay-at-home orders

**WORDPRESS is 4.93%** of all traffic in EMEA during COVID-19

**15% YouTube**

**YouTube is over 15% of all global traffic** during the worldwide stay-at-home orders

**WhatsApp 12.78%** of total Satellite traffic during stay-at-home

## Applications driving growth during COVID-19

**What applications grew the most during the stay-at-home orders and why?**

- **Remote Conferencing:** Zoom began the global shutdown as the darling of the industry, but dropped after security issues and Teams, WebEx, and others, picked up the slack. Schools and businesses used conferencing tools to keep in touch and have interactive sessions.

- **VPNs:** Remote workers always use VPNs to connect to corporate networks remotely; those connections are just up full-time now.

- **Video Streaming:** One of the primary sources of entertainment during the shutdown is streaming video, specifically a great deal of binge-watching.

- **Gaming:** The shutdown began with a flood of downloads, then interactive (and even cloud) gaming was constantly active to entertain users.

- **Social Sharing:** Not just classic social networking like Facebook and Instagram (and a surprise entrant of Twitter in a Top 10), but messaging apps like WhatsApp and Skype as well as cloud storage from Apple, Google, and Samsung reflected the strong power of social networking to keep people connected during this challenging time.

## Is this the New Normal?

**Broadband consumer networks are under the biggest change in history during the COVID-19 worldwide pandemic. Traffic that has normally been distributed among enterprise, education, and public WiFi networks – and to a lesser extent mobile and satellite (more on this later) – has now collapsed onto a single network access - fixed consumer broadband networks. This has caused significant changes in traffic composition, and introduces new challenges for networks worldwide.**

Overall, Sandvine saw traffic in our Global Internet Phenomena Report grow almost 40% between February 1st and April 19th – the report period we used for this spotlight. For a short period of just two and a half months, that is a staggering increase in volume for network operators to cope with and absorb without impact network performance and QoE. Fortunately, this traffic increase was not solely centered around peak hour increases (although there was some of that), and many networks were able to survive the initial onslaught of traffic increases.

The initial volume increase came during the daytime, when most consumer broadband networks are underutilized while students are at school and adults are at work. As shown in the diagram on the right, the new COVID-19 broadband household has many users consuming all kinds of different traffic types, each with different QoE expectations and impact on overall bandwidth usage. High volume downstream video streaming, video conferencing, and game downloads mix with upstream video conferencing, social network live streams and uploads, as well as lower volume work and messaging applications. This daytime traffic stretched the peak usage hours from a normal of 7pm to midnight to a period of 10am to midnight – which in some networks essentially doubled their total daily volume usage, and even increased peak usage significantly (Comcast reported peak increases of up to 38% on their public blog.)

As a network operator, as you read through this Phenomena Report, the question that you should be asking is: **"Can my network meet consumer expectations if this is the new normal?"**



| Traffic Growth | 1 Feb – 1 Mar Growth | 1 Mar – 1 Apr Growth | 1 Apr – 19 Apr Growth | Total 1 Feb – 19 Apr |
| --- | --- | --- | --- | --- |
| Upstream | +2.07% | +123.18% | -2.95% | +121% |
| Downstream | -2.39% | +11.72% | +13.67% | +23% |
| Total | -1.74% | +28.69% | +9.28% | +38% |

# Global Application Category Traffic Share

## GLOBAL APPLICATION CATEGORY TOTAL TRAFFIC SHARE

**1** **VIDEO STREAMING:**
2019: 55.44% **2020: 57.64% (+2.20%)**

**2** **SOCIAL NETWORKING:**
2019: 8.95% **2020: 10.73% (+1.78%)**

**3** **WEB:**
2019: 10.14% **2020: 8.05% (-2.09%)**

**4** **MARKETPLACE:**
2019: 5.90% **2020: 4.97% (-0.93%)**

**5** **MESSAGING:**
2019: 3.79% **2020: 4.94% (+1.15%)**

**6** **FILE SHARING:**
2019: 8.51% **2020: 4.64% (-3.87%)**

**7** **GAMING:**
2019: 2.20% **2020: 4.24% (+2.04%%)**

**8** **VPN: 2.56%**
2019: 2.46% **2020: (+0.10%)**

**9** **CLOUD:**
2019: 1.26% **2020: 1.83% (+0.57%)**

**10** **AUDIO:**
2019: 55.44% **2020: 0.39% (-0.39%)**

## Video, Gaming, and Social Sharing: The Phenomena that Matter

In last year's Phenomena Report, we identified three key application classes that were driving consumer broadband usage and more importantly, shaping their perception of the user experience delivered to them by their network operators – whether that operator was fixed, mobile, WiFi, or even satellite. Video, Gaming, and Social Sharing are the most high profile categories of "QoE-sensitive" applications that cause consumers to switch plans for more attractive offers, run speed tests when a bad experience occurs, and churn if they are not satisfied with their network performance.

The sign of "critical" applications are the ones that grow the most during times when people are turning to their broadband connections as a lifeline. So the question during the COVID-19 pandemic is: what applications grew the most? With traffic growing by almost 40% overall, it is important to recognize that pretty much ALL traffic types grew during this time, even the ones that are down as an overall percentage (like file sharing, which grew by volume over normal, but not as fast as other applications).

**Video:** It is no surprise that video streaming is not only number one overall, but grew its overall traffic share. The shutdown has been characterized by a high volume of accelerated video releases to streaming, binge-watching multiple seasons of TV shows, and an avid search for entertainment and information on what is happening in the world since people are not able to go outside their homes. This is not only OTT video, but also includes video traffic from social networks (like TikTok) that has spiked during this time as well.

**Gaming:** Although gaming is 7th overall, it grew its share the second most of any category – by over 2% of the total traffic. Although the initial surge in gaming was download traffic, interactive gaming traffic, including cloud gaming services like GeForce Now and Stadia, grew during the report period as consumers grew bored of video, decided that games were more fun than work, or new content was released to capitalize on the attention that games were receiving during the shutdown.

**Social Sharing:** Social Sharing is not just social networking, it is the entire ecosystem from taking pictures and videos and storing in the cloud, sharing on social networks, and then messaging friends and family. Social networking traffic alone was second overall with 10.73%, and when you combine all Social Sharing categories, you hit 17.5% of overall traffic volume for the category. During these times, this category is what is keeping people connected and it is critical to worldwide communications.

## Current Internet Traffic

VIDEO  GAMING  SOCIAL  **~80%**

**Everything Else ~20%**
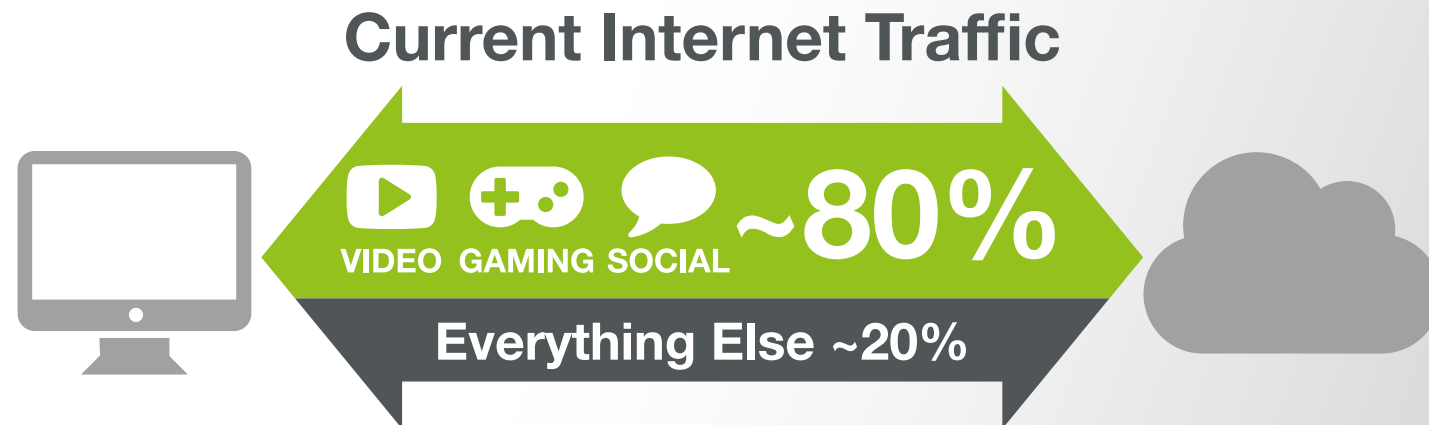
## GLOBAL APPLICATION TOTAL TRAFFIC SHARE

**1** **YOUTUBE:**
2019: 8.69% **2020: 15.94% (+7.25%)**

**2** **NETFLIX:**
2019: 12.87% **2020: 11.42% (-1.45%)**

**3** **HTTP:**
2019: 3.61% **2020: 6.57% (-2.96%)**

**4** **BITTORRENT:**
2019: 7.75%% **2020: 5.23% (-2.52%)**

**5** **FACEBOOK:**
2019: 3.37% **2020: 3.68% (+0.37%)**

**6** **HTTP MEDIA STREAM:**
2019: 13.76% **2020: 3.64% (-10.12%)**

**7** **GOOGLE:**
2019: 1.23% **2020: 2.91% (+1.68%)**

**8** **WORDPRESS:**
2019: 0.10% **2020: 2.88% (+2.78%)**

**9** **INSTAGRAM:**
2019: 2.64% **2020: 2.72% (+0.08%)**

**10** **FACEBOOK VIDEO:**
2019: 2.46% **2020: 2.29% (+0.17%)**

## YouTube is the Undisputed King

From a internet phenomena perspective, this unprecedented global shutdown has led to a unique opportunity to once and for all answer the question: What is the most popular content on the internet? As mentioned earlier, this shutdown has concentrated the vast majority of internet traffic on a single access – consumer broadband – which just happens to be what Sandvine monitors worldwide. As s result, we can for the first time truly gauge what consumers use their broadband for without a dilution of access on enterprise, education, and public WiFi (for the most part). And it is not a huge surprise to me that YouTube is the king.

YouTube is always the leading application by a wide margin in the Mobile Internet Phenomena Report. Netflix is usually the top application in the fixed-line-centric Global Internet Phenomena Report, but neither of those reports include much enterprise, education, or public WiFi traffic. This report gets an unprecedented view of the internet as it is really used by consumers.

And YouTube wins. By a pretty decent-sized margin (for a traffic share number!), with over 15% of all global traffic during the first few months of the global shutdown. It is important to remember that most of the major video streaming services (including YouTube and Netflix) changed their default streaming resolution to standard definition during the COVID-19 pandemic, so this number would have been even higher for both streaming services if it was not for that major change.

YouTube's short-form video, even in the time of binge-watching, still leads the way, driven largely by the youth that will never purchase a cable subscription, and many that won't even purchase OTT services (or at most one or two).

During the COVID-19 pandemic, YouTube is a major source of information for consumers – not just on what is happening in the world, but also on new recipes, fitness programs, DIY masks, and a whole host of topics that people seek an authoritative voice on – which YouTube is regarded to be the worldwide leader in.

Netflix, with Tiger King powering the early part of the lock-down, was second overall, barely declining from the Global Internet Phenomena numbers it posted last year. Since Netflix also reduced the default resolution, this number could have been much higher if HD and 4K streams had been more prevalent.

The rest of the Top 10 was in line with what would be expected with one major exception – WordPress. WordPress has a much stronger showing than it ever has in the Phenomena Reports, clearly driven by the need for many people to blog and share their experiences during this challenging time, and functioning as a personal diary of the shutdown for many consumers.

**15% YouTube**

**YouTube is over 15% of all global traffic** during the worldwide stay-at-home orders

**11% OF GLOBAL TRAFFIC IS NETFLIX**

**during the worldwide stay-at-home orders**

## AMERICAS TOTAL TRAFFIC SHARE TOP 10

**1** NETFLIX:
2019: 6.02% **2020: 19.11% (+13.09%)**

**2** YOUTUBE:
2019: 3.80% **2020: 14.43% (+10.63%)**

**3** HTTP MEDIA STREAM:
2019: 8.02% **2020: 6.21% (-1.81%)**

**4** PLAYSTATION D/L:
2019: 1.24% **2020: 3.99% (+2.75%)**

**5** XBOX LIVE D/L:
2019: 1.24% **2020: 3.71% (+2.47%)**

**6** AMAZON PRIME:
2019: 0.26% **2020: 2.89% (+2.63%)**

**7** HULU:
2019: 0.10% **2020: 2.85% (+2.75%)**

**8** INSTAGRAM:
2019: 0.86% **2020: 2.10% (+1.24%)**

**9** FACEBOOK:
2019: 1.11% **2020: 2.02% (+0.91%)**

**10** DISNEY+:
2019: 0.00% **2020: 2.00% (+2.00%)**

## The Big 4 OTT Streamers Dominate

In the world of OTT Video Streaming, there are four big players in the US: Netflix, Amazon Prime, Hulu, and now Disney+. During the COVID-19 shutdown in the Americas, all four of these OTT services made the Top 10 list, with Disney+ making the first appearance in the Phenomena Report charts since its introduction.

When you analyze the Top 10 list for the Americas, what jumps out at you is the clear dominance of the three key phenomena areas. Every single application in the Top 10 is either a video, gaming, or social sharing application. Gaming in particular is higher in the Americas than in any other report, reflecting the early download surge and the sustained playtime that students who are supposed to be doing school work (or adults that are supposed to be working from home!) are getting during this stay-at-home period of time.

The Americas is the only segment or region in the COVID-19 Phenomena Report where YouTube is not number one overall. Netflix has always been strongest in North America, and once the shutdown began, Netflix traffic levels jumped significantly, powered by binge-watching of both original content and licensed content, Netflix thrived during the report period, and actually grew stronger as the shutdown dragged on, indicating that the shows that consumers may have finished their first wave of binge-watching and have now turned to Netflix's extensive library for entertainment.

The decline in HTTP Media Stream indicates the decline in popularity of secondary streaming services and the focus on binge-watching on the major OTT services. Operator IPTV also fell out of the Top 10 in the Americas for the same reason – especially since there is no sports on, which has affected live TV ratings.

Amazon Prime, Hulu, and Disney+ are also in the Top 10 in the Americas, completing the run of the major OTT video services. All are in the 2% of total volume range, and when added with all the other video services in the Top 10, equal almost 50% of the total bandwidth usage in the America's alone – without any of the long tail video streaming services added in.

Gaming, powered by downloads and the emergence of cloud gaming, sits behind video streaming in the Americas, with a close parity between Sony and Microsoft in traffic volume. Gamers are clearly keeping themselves busy, and game companies are benefiting financially from the search for entertainment.
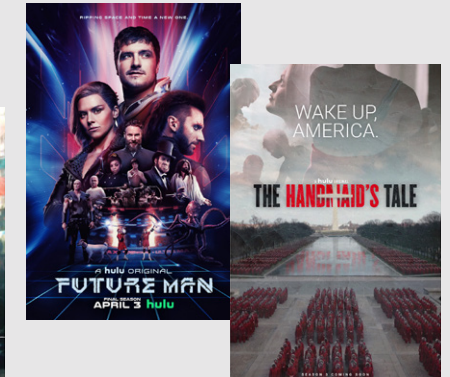
Finally, the two major social networks – Instagram and Facebook – fill the open spots in the Top 10, reflecting consumers' use of social networking to keep in touch with family, friends, and the world in general.

## Popular Shows During Pandemic

# Tier 1 Fixed: Total Application Traffic Share
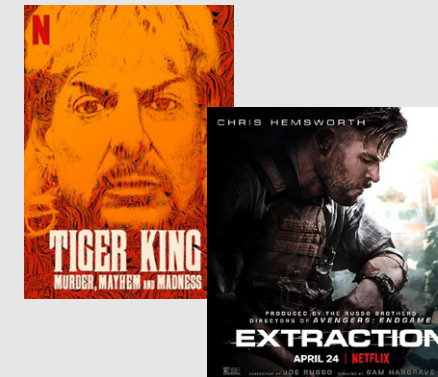
## TIER 1 TOTAL TRAFFIC SHARE **TOP 10**

**1** YOUTUBE
12.85%

**2** NETFLIX
9.77%

**3** HTTP MEDIA STREAM
6.64%

**4** FACEBOOK
5.58%

**5** HTTP DOWNLOAD
4.98%

**6** HTTP
3.69%

**7** FACEBOOK VIDEO
3.57%

**8** HTTP (TLS)
3.46%

**9** PLAYSTATION D/L
3.23%

**10** BITTORRENT
3.13%

## Tier 1 Fixed Broadband Spotlight

**Traditionally, the largest source of traffic for the Global Phenomena Reports are the Tier 1 fixed broadband (cable, DSL, FTTx) networks around the world. These operators offer the highest broadband speeds and packages to consumers, and have borne the majority of the volume increases of internet traffic during the COVID-19 pandemic.**

To be included in this spotlight, a fixed network operator was required to have at least one million subscribers to qualify for this category. The sample was taken from a global view that had operators from every region.

These fixed-line networks have become the aggregation of the vast majority of internet traffic during the COVID-19 pandemic, as traffic from enterprise, education, and public WiFi all has collapsed on to these consumer broadband networks. This substantially changed the composition of traffic on these networks, as what is usually dominated by video traffic was much more diverse. Normally in the Top 10 of the Global Internet Phenomena, the last application is near 2% of total volume. In the Tier 1 only view, the #10 application is over 3% – and is BitTorrent! This shows the addition of traffic from these other sources has significantly changed the composition of the Top 100 (the Top 10 is not terribly different), so the long tail of applications has grown significantly over normal.

Despite the strength of Netflix in this market, YouTube is still the #1 application on the Tier 1

fixed broadband networks. In a non-COVID time, Netflix (or HTTP Media Stream or Operator IPTV) would likely be vying for the #1 spot. YouTube has proven that it is the internet authority on pretty much any topic – and consumers are looking for lots of information during this time; everything from cooking tips and recipes to how to make DIY masks to the true story behind the Tiger King to seeking out the real story behind COVID-19.

Operator IPTV, whose traffic volume in the Global Phenomena Report is primarily driven by this type of operator, doesn't even make the Top 10. The theory behind why Operator IPTV is not in the Top 10 is pretty simple – outside of news, there is no live sports on, new TV series are finishing up their season runs, and live talk shows are trying to broadcast from home and not finding the level of success that they have normally.

Outside of video streaming, the Top 10 for fixed networks lines up with what you would expect to see. There is more HTTP traffic than normal – HTTP Download, HTTP, and HTTP (TLS) all reflect consumers interacting with news sites and checking on local status updates for what is happening in the world around them. Most fixed-line networks have far more Facebook than Instagram, so seeing Facebook in the Top 10 and no Instagram is to be expected (Instagram does not have a good desktop interface).

PlayStation Downloads is always ahead of Xbox in most of these rankings (Xbox is right outside the

Top 10), so gaming is represented as expected. BitTorrent is always present on fixed networks, with heavier usage in European and APAC fixed networks due to content rights issues.
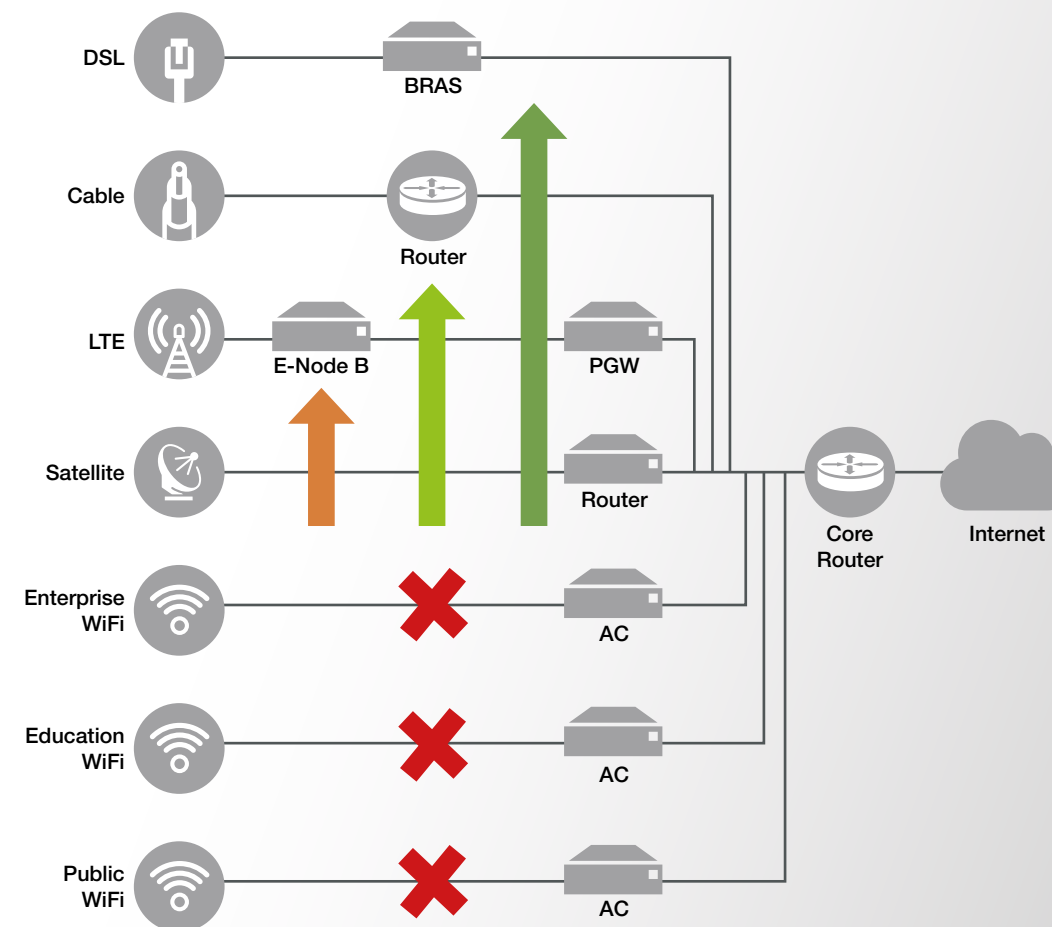
## EMEA TOTAL TRAFFIC SHARE
## TOP 10

**1** **YOUTUBE:**
2019: 6.70% **2020: 16.23% (+9.62%)**

**2** **HTTP:**
2019: 0.88% **2020: 10.48% (+9.56%)**

**3** **BITTORRENT:**
2019: 5.26% **2020: 8.38% (+3.12%)**

**4** **NETFLIX:**
2019: 6.09% **2020: 7.69% (+1.60%)**

**5** **WORDPRESS:**
2019: 0.15% **2020: 4.93% (+4.78%)**

**6** **FACEBOOK:**
2019: 1.51% **2020: 4.36% (+2.85%)**

**7** **INSTAGRAM:**
2019: 0.76% **2020: 3.74% (+2.98%)**

**8** **GOOGLE:**
2019: 0.27% **2020: 3.47% (+3.20%)**

**9** **FACEBOOK VIDEO:**
2019: 0.45% **2020: 3.26% (+2.81%)**

**10** **HTTP MEDIA STREAM:**
2019: 2.54% **2020: 2.54% (-5.30%)**

## Social Networking as a Coping Mechanism during COVID-19

EMEA traffic volume lines up reasonably well with other regions with a few notable exceptions, based upon the fact that the region started the stay-at-home process earlier, and the usage patterns have settled and even evolved more than the Americas and many parts of APAC.

Europe began their stay-at-home period in early March as Italy was the first country to be hard-hit in Europe. Since the report period starts on March 16th, many of the early surges in traffic were already complete in EMEA as we started the data analysis.

For example, you will not see any gaming traffic in the Top 10 in EMEA, and there is always gaming applications in the Global Phenomena Report in EMEA. PlayStation Download and Twitch were both in the Top 10 of the 2019 Report, and neither make the Top 10 in this analysis.

What does jump out in the EMEA results is a hunger for information from EMEA consumers. HTTP (which is unencrypted web browsing) is over 10% of total traffic volume – the highest that I have seen it during the past few years. Combined with the jump in Google traffic (at 3.47%), this shows that the EMEA consumer is looking for information and interacting more with the internet in traditional ways – searching for information both through traditional browsers as

well as embedded browsers (which is where I suspect a lot of the unencrypted HTTP is coming from). During this time period, there is a lot more interaction with local and national government sites, as consumers check on the latest on local regulations and stay-at-home orders, employment benefits, healthcare information, and guidance on business openings.

The other outlier, which fueled its position in the Global Top 10, was WordPress. WordPress is used by not only bloggers, but by many publications and websites as their content management system, and we recognize it as a distinct application in our application recognition engine. With 4.93% of all EMEA traffic, it shows how much content is being shared to try and both inform consumers (from publications and businesses) as well as from individuals who are blogging on how this experience is affecting them as a way to cope. WordPress is often used by professional bloggers rather than social networks as the tools are more sophisticated.

Speaking of social networking, Instagram and Facebook take their normal spots in the Top 10 to carry the majority of the load as a coping mechanism and to keep in touch with friends and family in the absence of being able to physically interact with them. The term "social distancing" is essentially being played out in with these applications serving as the replacement.

Finally, as is normal in EMEA, BitTorrent is one of the leading applications in the region. Unlike the Americas where people are binge-watching through OTT services, many EMEA consumers binge-watch by pirating entire movies or TV series through BitTorrent clients to get around paying for multiple OTT services. Usage grew as an overall percentage despite the high rate of piracy during the last report that was driven by the last season of Game of Thrones.

EMEA also had the expected video applications in the Top 10, with YouTube at #1, Netflix at #4,

and HTTP Media Stream at #10. YouTube was ahead of the global average, but Netflix was lagging its global number, which is normal in the Global Internet Phenomena Report, and has a lot to do with the content library throughout Europe (see the comment on BitTorrent earlier!). There are other OTT services that sit outside the Tope 10 – Sky Go, BBC iPlayer, and Amazon Prime were in the Top 100, and TikTok and Twitch were also in the Top 50 representing social video services.

# WORDPRESS
is **4.93%** of all traffic in EMEA during COVID-19

## T1 MOBILE TOTAL TRAFFIC SHARE TOP 10

**1** YOUTUBE
19.99%

**2** INSTAGRAM
6.91%

**3** NETFLIX
6.79%

**4** FACEBOOK
4.76%

**5** HTTP
4.62%

**6** GOOGLE
3.52%

**7** HTTP (TLS)
3.42%

**8** TWITTER
2.90%

**9** PLAYSTATION D/L
2.06%

**10** FACEBOOK VIDEO
1.79%

## Social Networking drives Mobile Traffic

**Despite the majority of traffic being concentrated on consumer broadband networks, there are still a lot of places in the world where mobile is the primary internet access mechanism (often called mobile first markets), or where attractive unlimited plans are used as a fixed-mobile substitution service by consumers. How did mobile networks change compared to the massive shifts we saw on fixed networks?**

Consumers have come to associate social networking with their mobile devices. Over 78% of users access Facebook only via mobile devices, and 98% have accessed using a mobile device. Instagram is almost exclusively mobile, as the desktop version is far less attractive than the mobile client. Over 80% of Twitter users access their feed via mobile. Social messaging applications like WhatsApp, FaceTime, Snapchat, and Facebook Messenger are also primarily accessed via mobile devices, often as the primary voice and video communication methods for younger consumers.

During the COVID-19 pandemic, social networks were stronger than ever as the consumers that remained on mobile connections continued to spend their time on social networks. Instagram was second overall, continuing to show its strength versus Facebook and serving as an outlet for sharing memes on the worldwide frustration with the stay-at-home orders. Facebook logged in at fourth overall, and the associated Facebook Video service was #10 (if combined they would still be slightly behind Instagram, validating Instagram's position as the leading social network overall for this report on mobile).

The big head turner in this segment of the market was the appearance of Twitter in the Top 10. This is the first time in any of the recent Phenomena Reports that Twitter has made the Top 10. If you look at the content served on Twitter, it is not an ideal platform for consuming bandwidth. Small snippets of text with either an image (common) or a video (uncommon) – albeit at a massive volume – do not tend to position an application well for overall traffic share. However, the strength of Twitter as a social network is the immediacy of news and information sharing, which is ideal during events like we are experiencing today. If you are an active Twitter user, you have seen the viral discussions that can occur after a politician speaks (especially on controversial topics like stay-at-home orders, closing borders, or defending their policies against their political opposition). Twitter reported that they had seen a 45% increase in curated events page usage and a 30% increase in direct message (DM) usage since March 6, reflecting it's strength as an information source for COVID-19 news. As with many of the changes we have seen during this event, it will be interesting to see if Twitter can keep this momentum in the future Phenomena Reports.

Video too had its traditional place as a leading source of traffic on video, with the perennial leader YouTube at #1. Interestingly enough, YouTube's percentage of traffic was down from the 25% it registered in the 2020 Mobile Internet Phenomena Report to 19.99%, but that can likely be attributed to the offload of YouTube traffic to the fixed-line networks changing the traffic mix (and enabling an application like Twitter to sneak into the Top 10!).

Much of the rest of the Top 10 can be accounted for if you account for the mobile first and fixed-mobile substitution markets around the world that make some mobile networks have the same traffic mix as a fixed network. In some markets, consumers only have mobile access to the internet, often in low income and low ARPU regions that are often prepaid access oriented. In other markets, mobile operators offer unlimited (or very high quota plans) in residential areas where they have excess capacity to compete with fixed-line offerings. In both cases, these mobile connections behave exactly like fixed networks do, and some of the applications in this Top 10 reflect that.

The biggest indicator of fixed line behavior is at #9 with the PlayStation Network download traffic. We see this make the Top 10 in the mobile report in Europe and the Middle East on a regular basis, so this is not a surprise (especially with the focus on gaming during the stay-at-home orders).

Netflix is also higher than the 4% it was in the 2020 Mobile Internet Phenomena Report with a total of 6.79%, reflecting more binge watching of content during those long hours at home.

**Twitter is the #8 global application** on mobile networks during the worldwide stay-at-home orders

# Zoom: The Early Darling of Stay-at-home

**When the stay-at-home orders began, there was an immediate focus by businesses and schools on how they could retain personal engagement with employees and students. The most aggressive company to jump in to try and capitalize on this need was Zoom, who offered free 45-minute sessions and became an instant focus of the business press and even the mainstream press.**

As stay-at-home orders were issued worldwide, many businesses began to more heavily leverage their existing conferencing and collaboration tools – Zoom being a popular option, but also WebEx, GoToMeeting, Microsoft Teams, BlueJeans, and even Skype for Business in some workplaces. They normally use these tools to conduct meetings with remote offices, or even to interact with customers that it was not possible to meet with face-to-face. Most large companies have a tool of choice that their IT department had chosen based upon the organizational requirements, and with their employees forced to work from home, these virtual meetings replaced the meetings that normally would take place in the office.

In educational institutions where students could no longer attend classes in person – from elementary schools all the way to colleges – there was an immediate search for alternative methods to conduct classes. Zoom (especially with the offer for free 45-minute meetings) quickly became the tool of choice and was featured in the mainstream media as the tool of choice for schools.

Zoom even penetrated into the consumer market as a way to maintain personal contact in a time when people could not see family and friends – think of how many screenshots you saw of Zoom meetings

over the past few months. Even Saturday Night Live used Zoom to conduct live shows, as well as in a subsequent show, they made fun of the issues we are about to discuss with Zoom.

As you can see in the graph to the right, as the stay-at-home orders began to come worldwide, Zoom traffic multiplied dramatically, scaling to orders of magnitude higher as Zoom gained popularity. It grew as fast as some of the most viral applications that we have seen in the Phenomena reports of the past, including games like Pokemon Go.

And then security issues began to hit the application. Zoom-bombing became a thing that caused many uncomfortable incidents in school sessions and many school districts banned Zoom. Many enterprises became concerned that their proprietary information could be leaked through covert meeting attendance and restricted the use of Zoom.

Zoom acknowledged the issues and has been working to resolve the issues, starting with making passwords part of each individual meeting invitation. Despite the security issues, the volume of Zoom traffic is still many times greater than it was when the pandemic started, so Zoom is likely to exit the pandemic with a much higher active user base than it entered it with, and they will also have a better product to go to market with.

**Zoom traffic over the early phases of the COVID-19 pandemic**
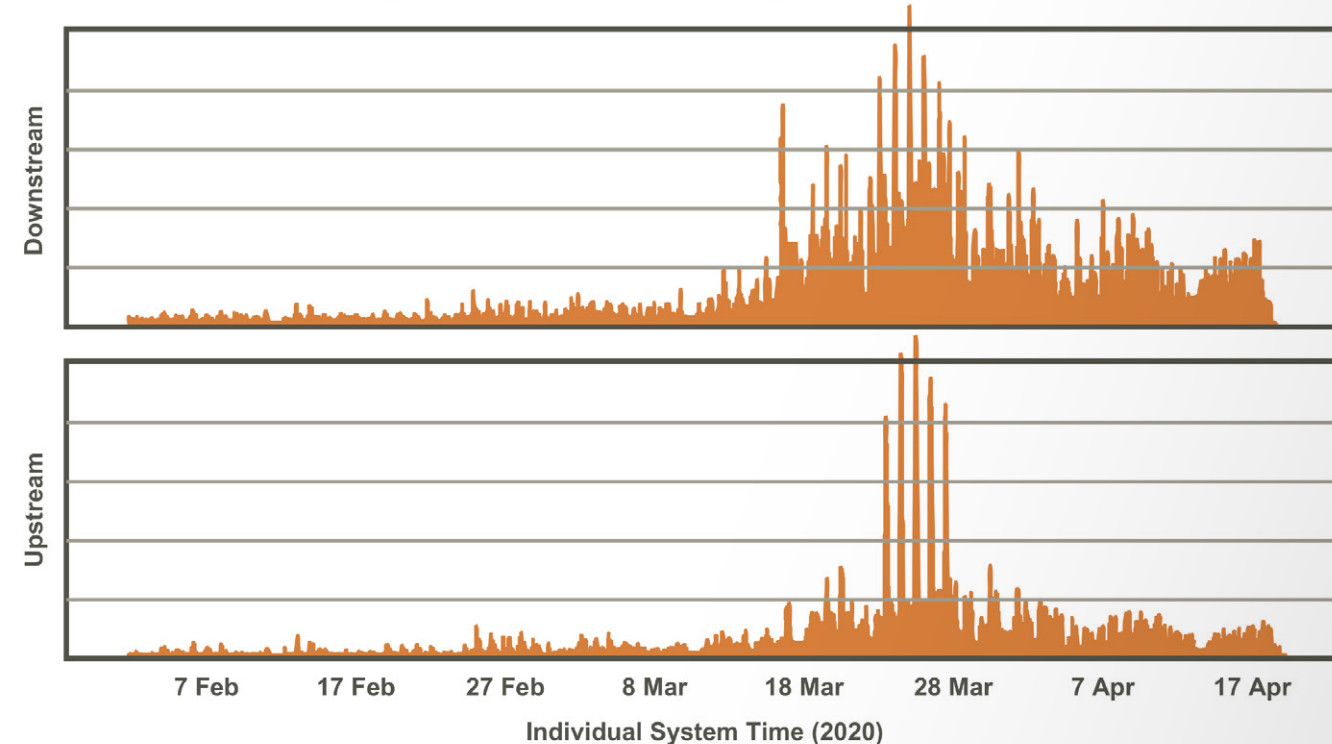
## APAC TOTAL TRAFFIC SHARE
## TOP 10

**1** **YOUTUBE:**
2019: 5.78% **2020: 18.30% (+12.52%)**

**2** **NETFLIX:**
2019: 5.62% **2020: 6.83% (+1.21%)**

**3** **FACEBOOK:**
2019: 5.35% **2020: 6.01% (+0.66%)**

**4** **HTTP D/L:**
2019: 6.53% **2020: 4.87% (-1.66%)**

**5** **FACEBOOK VIDEO:**
2019: 5.26% **2020: 4.67% (-0.59%)**

**6** **HTTP:**
2019: 5.04% **2020: 4.59% (-0.45%)**

**7** **BITTORRENT:**
2019: 7.58% **2020: 4.47% (-3.11%)**

**8** **HTTP MEDIA STREAM:**
2019: 10.05% **2020: 4.15% (-5.90%)**

**9** **HTTP (TLS):**
2019: 6.10% **2020: 3.10% (-3.00%)**

**10** **GOOGLE:**
2019: 2.39% **2020: 2.66% (+0.27%)**

## Web Browsing for Information

We highlighted in EMEA the volume of web browsing traffic, reflecting consumers searching for information and interacting with websites to try and discover the latest information on their local and global situation. In APAC, this was also a main focus of the traffic mix, reflecting potentially the maturity of the crisis of the region during the report period versus the Americas, where the stay-at-home orders had just begun during the report period.

When the HTTP applications in the Top 10 are combined, they total over 15% of total traffic volume. This is not as high as Europe (where the number was almost 19%), but gives insights into the behavior of consumers as the pandemic matured. Europe was the most mature during the report period, and consumers had evolved further along to search for information as they eagerly awaited re-opening information. In APAC, parts of the region (especially areas that are extremely well-connected like Singapore, Japan, and South Korea) were in the same phase as much of Europe, but other parts of the region were still not fully into the pandemic. The Americas on the other hand, were obviously early in the cycle, and focused on keeping themselves entertained with video, gaming, and social sharing.

Just as in Europe, the volume of web traffic and the appearance of Google in the Top 10 reflects a high volume of searches for information. Many of those searches likely led to the watching of YouTube videos (which was higher in APAC as a percentage than any other region), or led to other news or video sites (represented partially by HTTP Media Stream and probably a few Facebook videos).

YouTube has always been strongest in APAC in the Global Internet Phenomena Report, and Facebook Video has consistently been a leader in mobile networks in APAC, taking traffic share from YouTube in recent reports. Short form video on mobile devices is the norm in the region, and both YouTube and Facebook Video fill that market niche. Even though it is outside the Top 10, TikTok checked in at #17 in the APAC market, its strongest regional showing and worthy of a mention since it has gained a significant new user base during the pandemic that has spawned some viral videos.

Although Netflix is #2, the 6.83% is the lowest total traffic share that it racks up in the region, even lower than in Europe. This is also attributable to the content library, as the challenge of getting local language content in the variety of languages needed to fully serve the region is a challenge, so there are hotspots for Netflix in the region that carry the overall volume numbers.

BitTorrent is also in the Top 10 with 4.47% of total volume. Just as in EMEA, it is due to the desire for content that is not easily accessible in region, and consumers turn to piracy to watch their shows.

Over **15%** of all APAC traffic was **web browsing**

# Satellite: Total Application Traffic Share

## SATELLITE TOTAL TRAFFIC SHARE **TOP 10**

| | | |
|---|---|---|
| **1** | **YOUTUBE** | 16.88% |
| **2** | **WHATSAPP** | 12.78% |
| **3** | **NETLIX** | 9.29% |
| **4** | **FACEBOOK** | 7.69% |
| **5** | **INSTAGRAM** | 7.22% |
| **6** | **HTTP MEDIA STREAM** | 6.23% |
| **7** | **GOOGLE** | 4.98% |
| **8** | **FACEBOOK VIDEO** | 3.40% |
| **9** | **HTTP** | 3.35% |
| **10** | **HTTP D/L** | 2.41% |

## What's Up?

**Satellite is a very important access technology for rural residents around the world. Not every user is fortunate enough to have a fiber to their location, or even to have access to a good mobile connection. Satellite broadband serves many consumers worldwide, and the performance of these links are improving.**
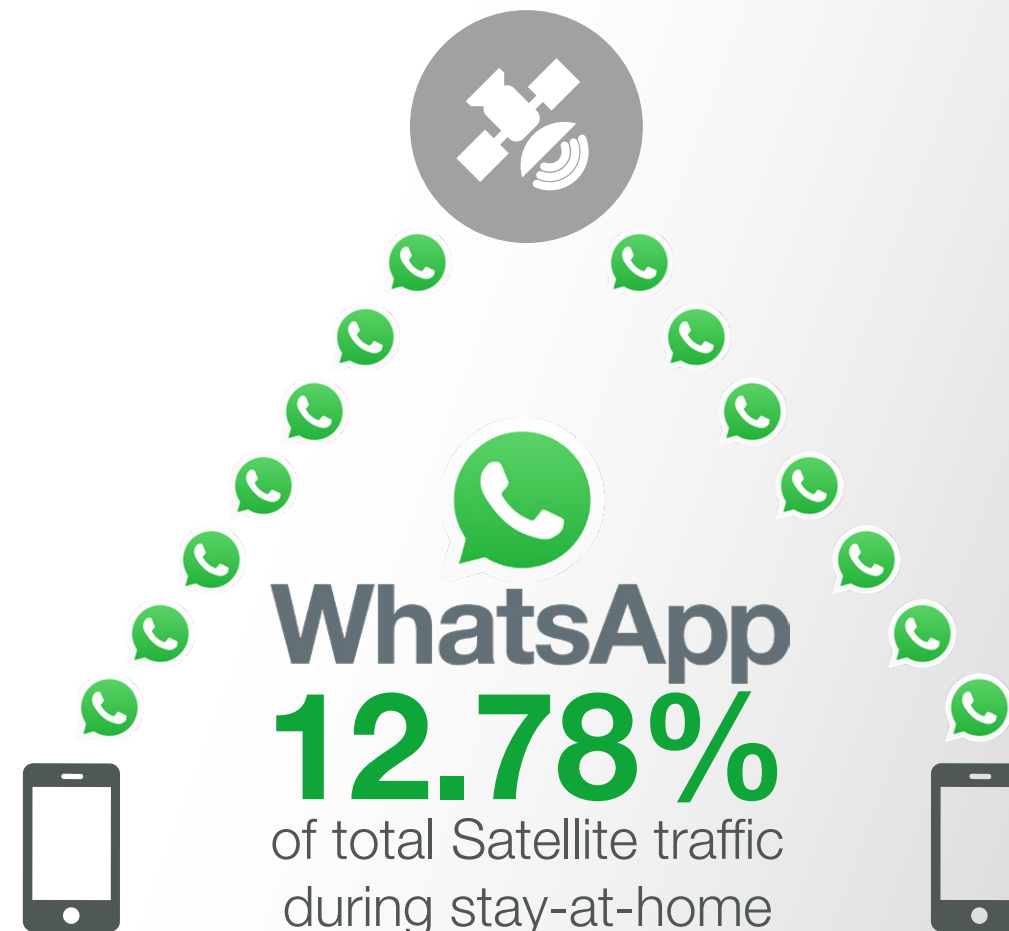
The satellite networks that are included in this section normally represent a combination of several market verticals. Transportation networks that offer WiFi on cruise ships and airplanes are included, but since very few of those are active, their contribution is minimal to overall traffic. Enterprise remote site connectivity is a portion of this access type, but much of that traffic is idle as well. So the volume covered here is centered around consumer broadband offerings over satellite, and this includes multiple networks in different parts of the world.

You might expect video to be less on a satellite network, but when it is your primary access, you consume video just like everyone else – maybe just at a lower resolution. Therefore it is not a surprise that YouTube is #1 on satellite networks just as it is on the other access networks, but the fact that it is higher than the global average is a bit of a surprise. The fact that Netflix is not far behind at #3 with almost 10% is a bigger surprise – and that is not Netflix download traffic – it is full streaming (albeit likely in standard definition!). HTTP Media Stream is #6 with 6.23%, so any thesis that satellite broadband cannot deliver streaming video to consumers is definitely disproved with this look at the Phenomena data. The overall percentage of video is certainly less than the Global Phenomena average (video is about 40% of the total volume

in this report), but still a critical application for consumers that are using satellite as their primary broadband access mechanism.

The #2 application on the satellite Top 10 did surprise me – WhatsApp phones in with a 12.78% traffic share. This indicates that many of the rural broadband users have adopted WhatsApp as a primary messaging application as more reliable and reachable than traditional voice services. During the COVID-19 stay-at-home orders, WhatsApp has also served as a valuable video conferencing service, which drove up the consumption of WhatsApp in general, and on a limited bandwidth network like satellite, it allowed WhatsApp to rise in the charts.

Outside of that, the Satellite Top 10 is in line with how a normal fixed-line network would appear with the exception that no gaming traffic appears in the Top 10 – which is not a surprise due to the high latency that satellite users experience. Gamers like to say that lag kills, and real-time shooters are not popular among satellite internet users – ask any Pacific Islander about that.

## WhatsApp
## 12.78%
### of total Satellite traffic during stay-at-home

# Spotlight: Streaming Video Traffic Share

## TOP 10 VIDEO SERVICES BY TOTAL TRAFFIC

1. YOUTUBE
2. NETFLIX
3. HTTP MEDIA STREAM
4. FACEBOOK VIDEO
5. TIKTOK
6. AMAZON PRIME
7. HULU
8. DISNEY+
9. TWITCH
10. OPERATOR IPTV

## Streaming Video

**Early in the pandemic, the Body of European Regulators for Electronic Communications in Europe asked the major video streaming providers to reduce their default streaming resolution to standard definition to prevent network congestion. The major providers agreed to do this and this may have been a huge factor in many networks being able to adapt to the massive increase in usage.**

With video being almost 60% of all traffic during the stay-at-home orders, some network operators are breathing a huge sigh of relief at the willingness of the OTT video providers to make that significant change to their streaming services. Note that this didn't prevent consumers from changing the stream to HD or 4k, but simply made the default SD. If this change had not been made, it is conceivable that video might have even touched 70% of overall bandwidth, but video QoE would have suffered mightily on many networks, especially during evening peak hours.

The Top 10 video services are pretty much what you expect, with the major OTT services: Netflix, Amazon Prime, Hulu, and Disney+ all in the Top 10. Disney+ is notable in that it is in the Top 10 despite not being available worldwide, but had some significant releases during the pandemic period with Frozen 2 and Onward that drove volume high, especially in the Americas. HTTP Media Stream is the catchall in this category, reflecting the long tail of OTT video offerings.

Social video showed strongly, with YouTube, Facebook Video, TikTok, and Twitch all placing in the Top 10. TikTok has come on strong during this shutdown, as people experiment with their own creativity as an outlet for their boredom – which has

resulted in some viral videos that are making the news on a daily basis! Twitch has also increased volume, as gamers flock to the network to not only watch games, but to live stream their own games.

The last category represented is Operator IPTV, which is drastically lower than the 2019 Global Internet Phenomena Report. This is due to a few factors, one of the biggest being that with no live sports, a lot of normal TV watching has shifted to OTT.

# Spotlight: Gaming Traffic Share

**TOP 10 ONLINE GAMES BY TOTAL TRAFFIC**

1. ROBLOX
2. PLAYER UNKNOWN
3. FORTNITE
4. LEAGUE OF LEGENDS
5. MINECRAFT
6. WAR THUNDER
7. GEFORCE NOW (CLOUD GAMING SERVICE)
8. MOBILE LEGENDS
9. OCULUS RIFT (VR GAMING SERVICE)
10. WARFRAME

## Gaming

Gaming has grown pretty explosively during the COVID-19 pandemic as adults and children seek entertainment outside of streaming video. Outside of gaming downloads, several mainstays and some new upstarts have shined during this report period.

There are a few fascinating changes in the gaming rankings from the last Global Report. The new #1 game (and it has been all year actually) is Roblox, which is taking the world by storm (at least from a traffic volume perspective). A game that allows users to not only create worlds but also create their own games is extremely popular with parents, and has exploded onto the scene strong in 2020. Minecraft, a kindred spirit to Roblox, is also in the Top 10.

The second surprise entrant is GeForce Now – the first time that a cloud gaming service has entered our charts. We have seen cloud gaming creeping up in popularity, and GeForce Now has shown steady growth throughout 2020. Although not a single game, it was worthy of inclusion as it has the potential to change the game significantly for network operators due to the high bandwidth and low latency requirements. Oculus Rift is also in the same vein, and enters the Top 10 for the first time at #9.

PUBG, Fortnite, and League of Legends are always strong, and are likely to remain the biggest games around for quite some time. They are joined by a few other similar games in the Top 10 with War Thunder, Mobile Legends, and Warframe.

# Spotlight: Social Networking Traffic Share

**TOP 10** SOCIAL NETWORKS BY TOTAL TRAFFIC

| | |
|---|---|
| **1** | FACEBOOK |
| **2** | INSTAGRAM |
| **3** | TIKTOK |
| **4** | SNAPCHAT |
| **5** | VK |
| **6** | TWITTER |
| **7** | PINTREST |
| **8** | ODNOKLASSNIKI |
| **9** | REDDIT |
| **10** | QQ |

## Social Networking

Facebook properties continue to lead the way for social networks, and we expect this to continue for the foreseeable future. Although Facebook still leads Instagram in the Global Report, the lead has shrunk and continues to do so.

It has turned into a bit of a generational gap with social networks. Facebook is now seen as the old person's social network, Instagram for the cool millennials, and TikTok for the Gen Z. Although not to the level of "ok Boomer", the social networking divide is likely to shift the balance of power over the next few years, but Facebook still has a tight grip on the vast majority of social networking traffic.

But there is life outside of Facebook. Besides TikTok, Snapchat experienced significant user growth during COVID-19, with a report stating that they had gained over 11 million new active daily users. Twitter cracked the Top 10 in the mobile analysis of this report, and has reported an uptick in usage. Pinterest has become a popular place to get new recipes as people seek variety during the stay-at-home period, and Reddit users have nothing better to do than post on Reddit.

International social networks are also very active, with VK, Odnoklassniki, and QQ all placing in the Top 10 by traffic volume, reminding us that there is a large social network community worldwide that is not centered around Facebook.

# Spotlight: Messaging Traffic Share
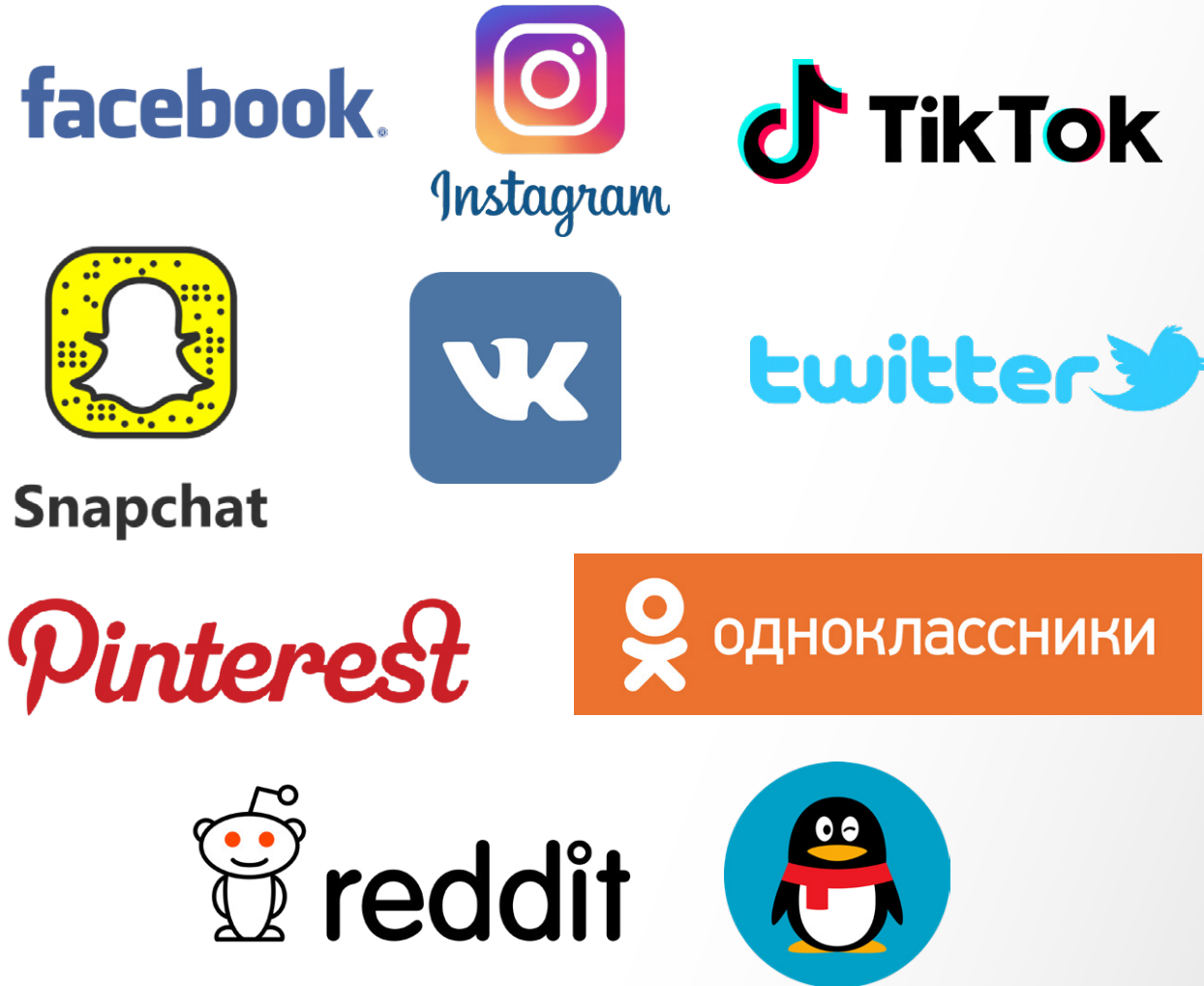
## TOP 10 MESSAGING NETWORKS BY TOTAL TRAFFIC

1 WHATSAPP

2 SKYPE

3 RTP

4 FACETIME

5 FACEBOOK MESSENGER

6 SNAPCHAT

7 WEBRTC

8 LINE

9 WECHAT

10 DISCORD

## Messaging

**Messaging and VoIP applications have been a critical lifeline during this pandemic. As we profiled earlier, business applications like Zoom have taken some of the consumer market with family group chats, but the volume even on Zoom is still dwarfed by WhatsApp and FaceTime traffic.**

WhatsApp, for the first time in a Global Internet Phenomena Report, has passed Skype for the #1 messaging position. WhatsApp has been rising in the charts over the past two years, and is stronger on mobile devices, whereas Skype is more popular with business users. The next Global Report will determine if this change is permanent for WhatsApp and Skype, or if the addition of the education and enterprise traffic is what powered WhatsApp to pass Skype in the Global Report.

FaceTime also shows strongly during this time as people are utilizing all kinds of video communications to see friends and family that they cannot see in-person. Since FaceTime is limited to Apple devices only, this is a strong statement on the popularity (and maybe the video quality and resolution) of FaceTime.

Other social messaging apps like Facebook Messenger and Snapchat make the Top 10. When combined with LINE and WeChat, this shows the global nature of messaging, as all of these networks are popular worldwide and see usage in every region.

Discord deserves special mention because of the close association with gaming. Discord traffic is up as gamers spend more time online, as they use Discord for real-time communications during games.

Finally, RTP and WebRTC are used in standard VoIP offerings by both network operators as well as plug-ins to web sites, which are getting quite a bit of use as people are no longer in offices with phones, but using remote communication services.

# Resources: Infographics and Other Links
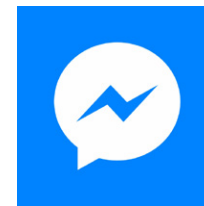
## Infographic links

### GRAPH PACK
Top 10 lists for all sections if you want to show the traffic share for any specific geography or class of application.
**CLICK HERE**

### INFOGRAPHICS PACK
What application categories are the leading consumers of internet bandwidth? The real question is, how much traffic on the internet is video?
**CLICK HERE**

### SANDVINE LOGO PACK
Need Sandvine logos for attribution?
**CLICK HERE**

## Want to know more about Sandvine?

### SANDVINE'S API GATEWAY
Want to make sure Sandvine has your application covered in our report? We have an API that you can use to keep us up-to-date:
**https://www.sandvine.com/api-gateway**

### ACTIVE NETWORK INTELLIGENCE
Visit **www.sandvine.com** to learn about our Active Network Intelligence solutions.

### ACTIONABLE DATA
How can the Global Internet Phenomena data become actionable in your network?
Check out our Use Case eBook to find out!
**https://www.sandvine.com/use-case-ebook**

### RESOURCES
Come see our Resources page for a wide range of videos, webinars, and whitepapers:
**www.sandvine.com/resources**

## Phenomena Roadmap

**WHERE TO NEXT?**
The plan for the Global Internet Phenomena Report is to regain a regular cadence with two main reports each year, and several spotlight reports when the data speaks to us.

We will return to the regular cadence in the fall with the next Global Report. We do not want to release it until things are "back to normal" so that we can compare how traffic patterns changed from this report. We will certainly choose the report period very carefully to avoid sampling bias of the impact of COVID-19.

**DO YOU HAVE REQUESTS FOR INSIGHTS?**
We love inbound requests for data from our customers, prospects, industry analysts, and press. Many of the topics we cover in the Phenomena Report cross boundaries from tech into entertainment, and we welcome inquiries where we can help give clarity to the market. If you have questions, please reach out to Sandvine at **phenomena@sandvine.com**

We will also blog regularly; if you missed some of our recent ones, check out the Phenomena Spotlights:
**https://www.sandvine.com/blog**