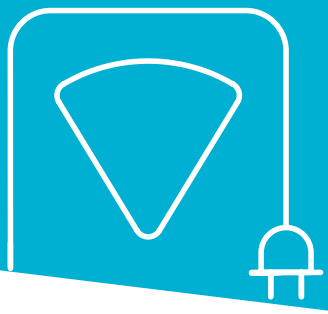

Impact of the lockdown on UK networks and TalkTalk service disruption during COVID-19

Overview of the lockdown's impact on UK networks

Residential broadband networks in Europe have been struggling with the Internet traffic increase due to mobility restrictions, lockdown measures and work-from-home policies. MedUX has been closely monitoring the impact of COVID-19 on the Customer Experience and residential fixed broadband performance in European households. Hundreds of metrics are being collected in real time (24/7), from the customer perspective, not only Ethernet performance but also Wi-Fi performance, and analysed to understand how Internet service is performing.

In general, the results shown in this first report are based on the nationwide average performance of wired connections to the router (via Ethernet), unless otherwise stated. However, we also analyse Wi-Fi and regional performance for some indicators. For this purpose, VDSL and HFC technologies with speed profiles ranging from 30 Mbps up to 100 Mbps for the four biggest operators, British Telekom, Virgin, TalkTalk and Sky, have been taken into consideration.

Overall, the UK's fixed networks have been handling the traffic increase well, and Internet service quality has been reasonably stable, but Customer Experience has been somewhat affected, especially when connected via Wi-Fi, on several days starting March 20th, just a few days before the Government imposed a lockdown on the whole population. By then, schools, colleges, nurseries, restaurants, pubs, clubs and indoor leisure centres were ordered to close their doors nationwide.

About MedUX

MedUX is the leading company in customer experience measurement in fixed, mobile and TV telecommunications networks, providing cutting-edge tools and innovative solutions for telecom operators, governments and companies. MedUX has a hybrid Technology, Software and Information as a Service model and now serves top Telecom Operators such as America Movil, Vodafone, Millicom and AT&T, in over 15 countries.

Our solutions enable our customers to stand out from their competitors, have real-time visibility into the true customer experience and in-home performance, reduce costs and the time to insight and enhance their value propositions, thereby increasing customer satisfaction, anticipating their problems and avoiding complaints.

Improving Customer Experience in the 5G era!

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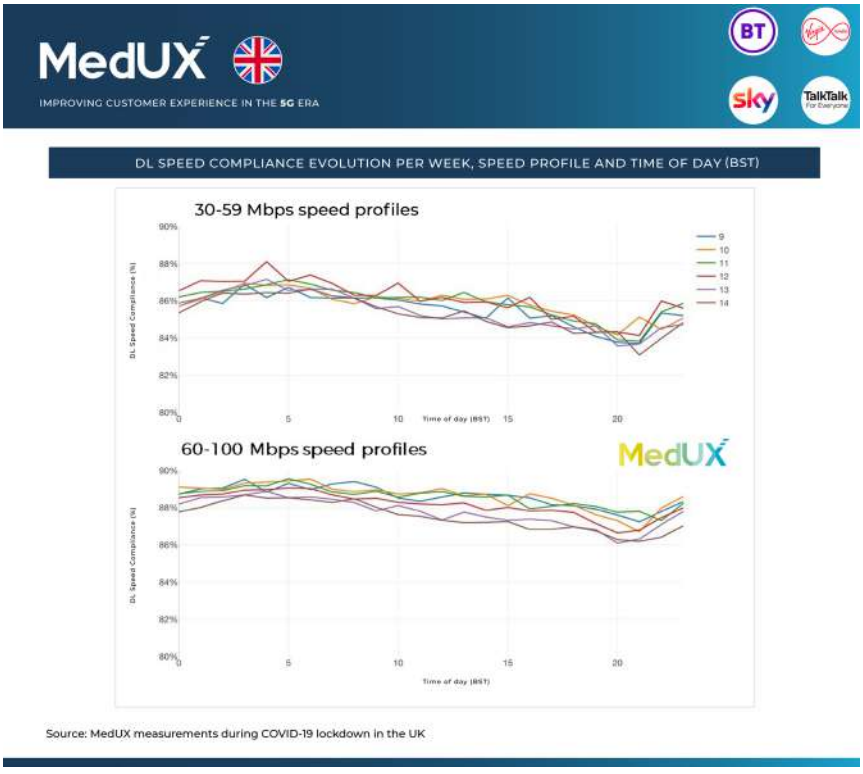
At MedUX, we believe that the coronavirus lockdown in the UK will make the Internet and the networks stronger than ever. The service degradation varies across technologies, operators, and regions, but connectivity and service availability have been high.

The UK's Telco Operators have played a fundamental role in mitigating the effects of the Internet traffic increase by taking reactive and proactive measures to maintain service quality and Customer Experience while supporting society during this time. During these uncharted times, there have been differences in the impact of the lockdown on network performance across Telco Operators. In general, the average Internet service quality has been stable for most users. The drop in average compliance with contracted speeds for wired connections (via Ethernet) was the highest during the evening hours of weeks 13 and 14 (see below). On average during those weeks, downlink compliance for 60-100 Mbps speed profiles was up to 4% lower than in the weeks before the lockdown.



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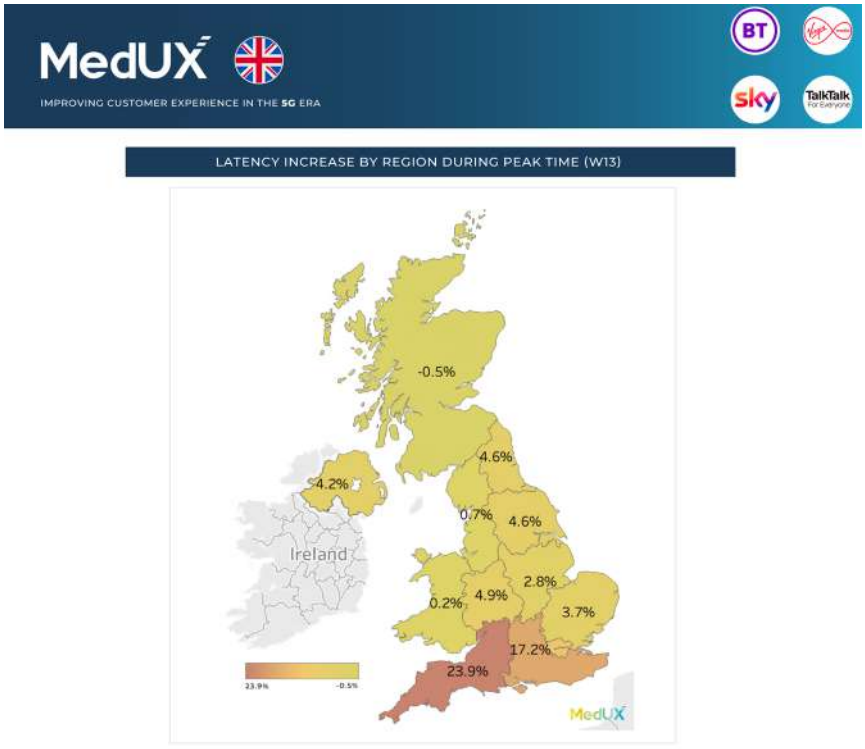
All regions have been affected in some way, but considering latency as a reference, South West, south East and London had a relatively more severe degradation in 100 Mbps services, as can be seen in the figure below. Comparing the week of the 23rd of March (W13) to the week of the 24th of February (W9), latency increased in most UK regions. As a reference, see below the impact on latency for the week starting the 23rd of March (W13) during peak time (20–21h), as the percentage of increase against the week beginning the 24th of February (W9), before the lockdown.



Source: MedUX measurements during COVID-19 lockdown in the UK

Based on MedUX statistics weekly or daily average impact has not been very material. However, significant degradations have been observed in basic parameters, such as latency (+100% % and above the gaming excellence reference of 20 ms[1]), packet loss (above the generally acceptable threshold of 1%) and contracted speed compliance (below 80%) during peak hours (around 20–21h) on the worst-performing days.

1 The customer experience could be affected as the figures during evening hours would be outside the recommended area of excellence for real-time gaming. In certain games, such as Massively Multiplayer Online (MMO) games like League of Legends, every millisecond counts and a 20 ms vs a 40 ms total latency can be the difference between awesome and unplayable. See our 2019 European Benchmark report for further insights on this regard at European level.

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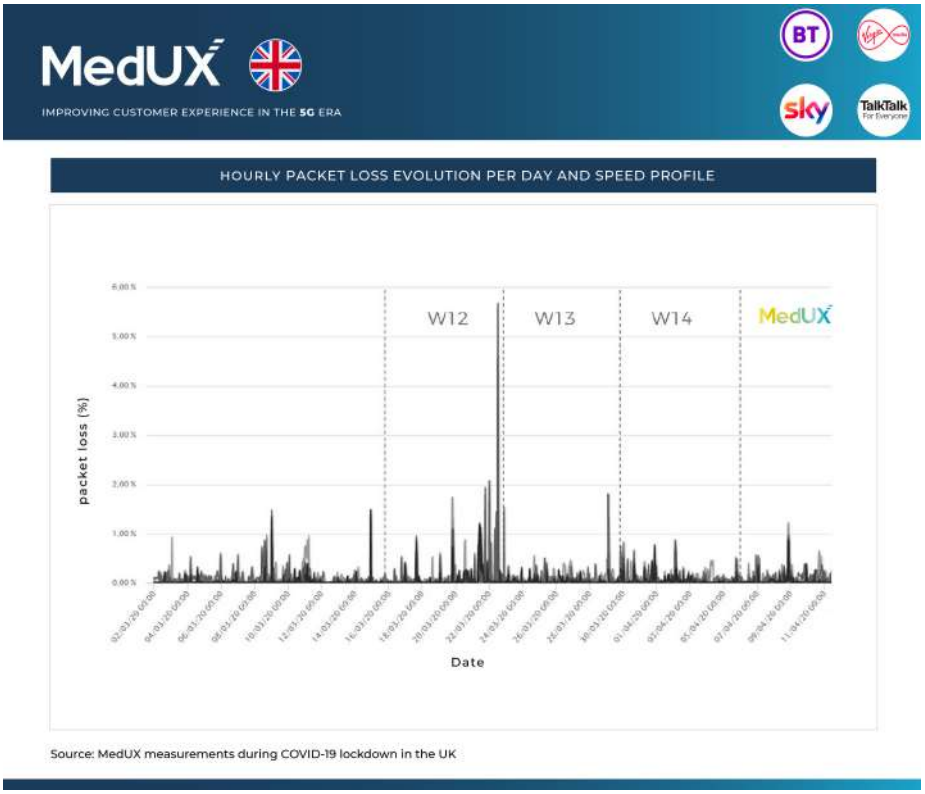
As a reference, see below the impact on packet loss on an hourly basis between the first week of March (pre-COVID-19) and the week of the 6th of April (W15). Several hours with an exceptional increase in packet loss have been observed for some operators and speed profiles, specially during peak hours (around 20–21h) on the worst-performing days of the week of the 16th of March (W12).



Indicators related to web browsing, gaming, cloud storage and streaming services have also been somewhat affected. According to MedUX statistics, the days when Internet services have been most affected were during the second half of March and the first half of April. Fortunately, these days are past, and network performance seems to be getting back to normal, probably as a result of the hard work of operators and several network improvement measures in response to the coronavirus crisis.

Aggregated and daily average performance parameters (although very interesting and reasonable measures) are not enough to provide a good understanding of service quality. Continuous measurements on an hourly basis (at least) are more useful for understanding the real impact on customer experience, particularly during busy hours.

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Apart from wired connection performance, Wi-Fi is key and should be taken into account to evaluate the true user experience, considering that a minority of devices are connected via Ethernet directly to the router. Wi-Fi has come a long way, but its performance is still far from that of an Ethernet cable connected directly from the device to the router.

The impact on contracted speed compliance over wireless connections (via Wi-Fi) for 60-100 Mbps services was significantly higher than that mentioned above over wired connections (via Ethernet) during the worst-performing days of the lockdown (see below).

Source: MedUX measurements during COVID-19 lockdown in the UK

Apart from overall performance degradations, an increase in service outages has been observed, as recently reported by the Daily Telegraph. Millions of customers have struggled with broadband issues, such as "a 62% rise in outages from the week of April 13 compared to the week of April 20".

The MedUX ecosystem helps our clients reduce the time to insight by obtaining meaningful information in real time regarding impacted customer services. Furthermore, it reduces the time to resolution by collecting detailed End-to-End performance statistics in real time and consequently responding to customer issues in a timely manner.

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TalkTalk's service disruption in the UK during COVID-19

- **Operator impacted:** TalkTalk (nationwide)
- **Date:** May 29, 2020
- **Duration:** Less than 2 hours, mostly between 10 AM and 12 AM (BST)
- **Access technologies affected:** VDSL
- **Potential impact:** 4.3 million DSL lines

On May 29, many TalkTalk users in the UK experienced a service disruption affecting Internet service across the country, which prevented TalkTalk's VDSL users from getting online and browsing the Internet. TalkTalk has around 4.3 million broadband customers, representing approximately 8% of the total broadband users in the UK. National newspapers reported the issue, and customers' complaints filled the social networks.

According to the British newspaper Daily Mail, 95% of complaints reported by TalkTalk customers were related to Internet problems.

TalkTalk worked hard to resolve the issue after the Internet outage hit many VDSL end-users during busy morning hours to continue providing customers with the service they need and keep them connected. The service was completely recovered within less than two hours, and the interruptions affected the customer experience only partially and temporarily.

MedUX observed a service outage during morning hours (between 10 AM and 12 PM BST) in TalkTalk VDSL services on May 29. This service degradation varied across regions, and the lack of Internet connectivity impacted the Customer Experience when customers were unable to access the Internet. At around 10 AM, service availability was at its lowest and recovered gradually afterwards. Based on MedUX information, this service disruption does not seem to be related to the lockdown or caused by increased demand.

As seen in the following figure, the percentage of successful tests was below 50% at the peak degradation time.

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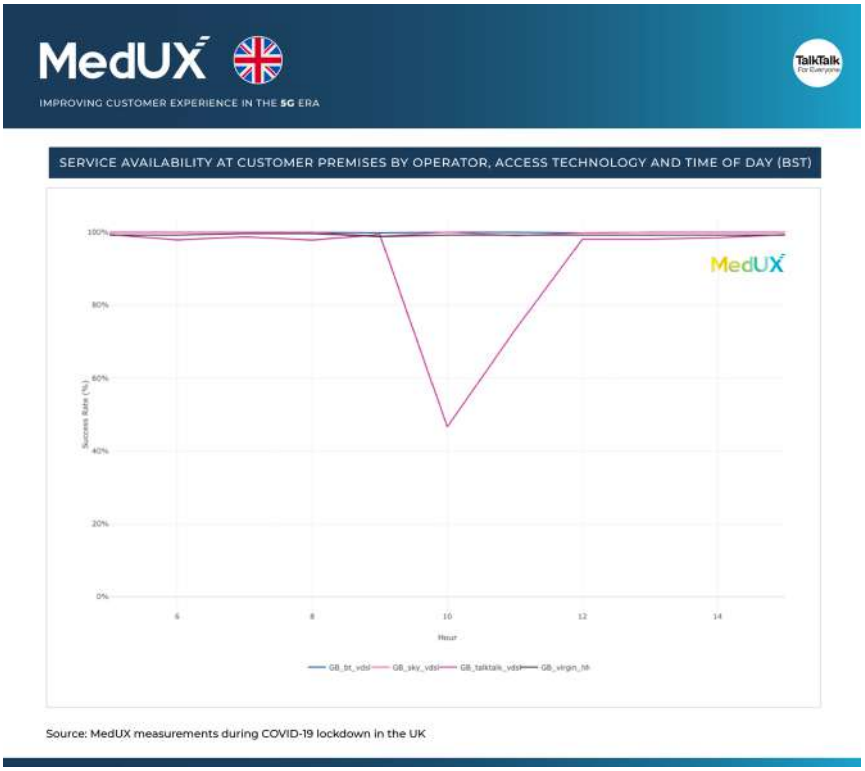
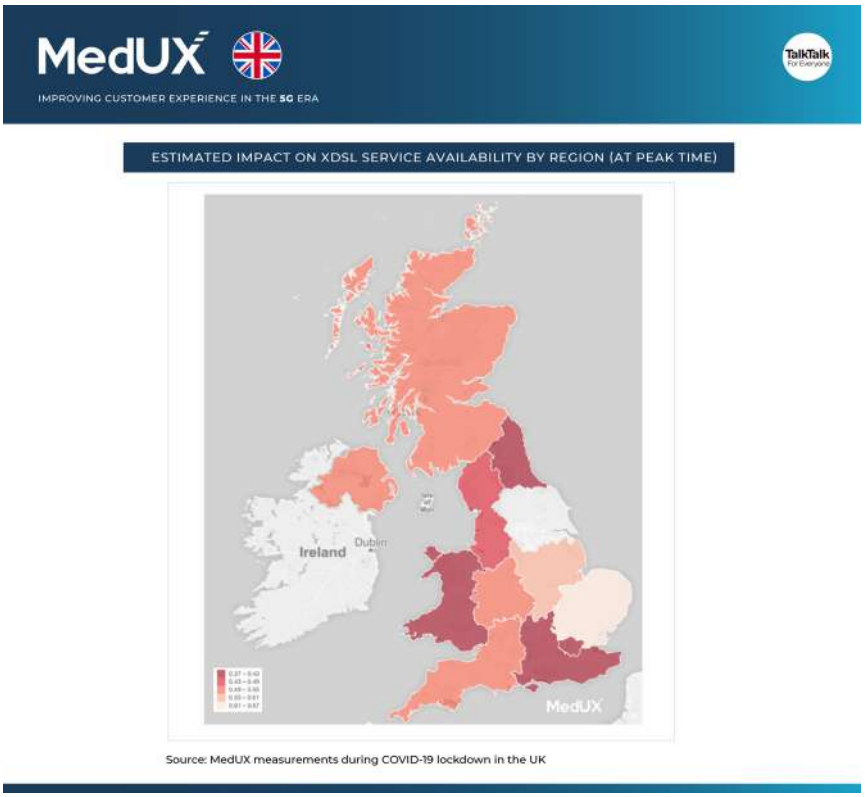


TalkTalk VDSL service degradation was not reflected in the rest of the operators, which continued performing as usual. As shown in the following figure, network service disruption for TalkTalk had a nationwide impact.



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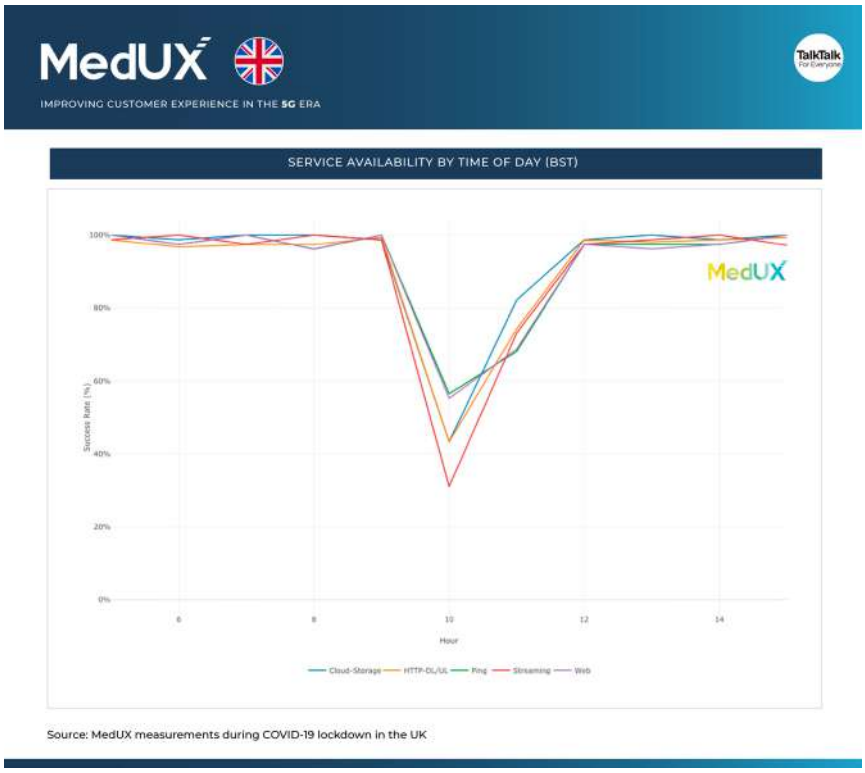
For the most affected regions, mainly Wales, London and the South East and North East regions, service disruption reached its peak around 10 AM, with network accessibility ratios around 40% on average.

The following figure evinces that this outage affected some of the most-used services, such as web browsing, cloud storage and video streaming, due to issues with Internet connectivity. TalkTalk's hard work and efforts toward network recovery mitigated the impact, as the service availability was recovered to over 90% after 11 AM, approximately one hour after peak degradation time.



Source: MedUX measurements during COVID-19 lockdown in the UK

It has been observed that not all the services were affected in the same way by the disruption. While the MedUX team is researching this fact to understand in detail the impact on customer experience, some general insights can be made.

MedUX's monitoring insights point to a loss of Internet connectivity or loss to the DNS platform, "DNS Unresolved", as the root cause of this service outage. This leads to customers experiencing issues when browsing, but also when trying to access other services. These problems are often the result of a wrong configuration or faulty equipment.

Apparently, TalkTalk customers with their own routers or different DNS settings than those pre-defined in the provider's routers (such as Google DNS server 8.8.8.8 instead of 79.79.79.79 or 79.79.79.80) cannot utilize any TalkTalk HomeSafe settings, including Virus Alerts, Kid Safe filtering and Homework Time, but would not be affected by these kind of issues.

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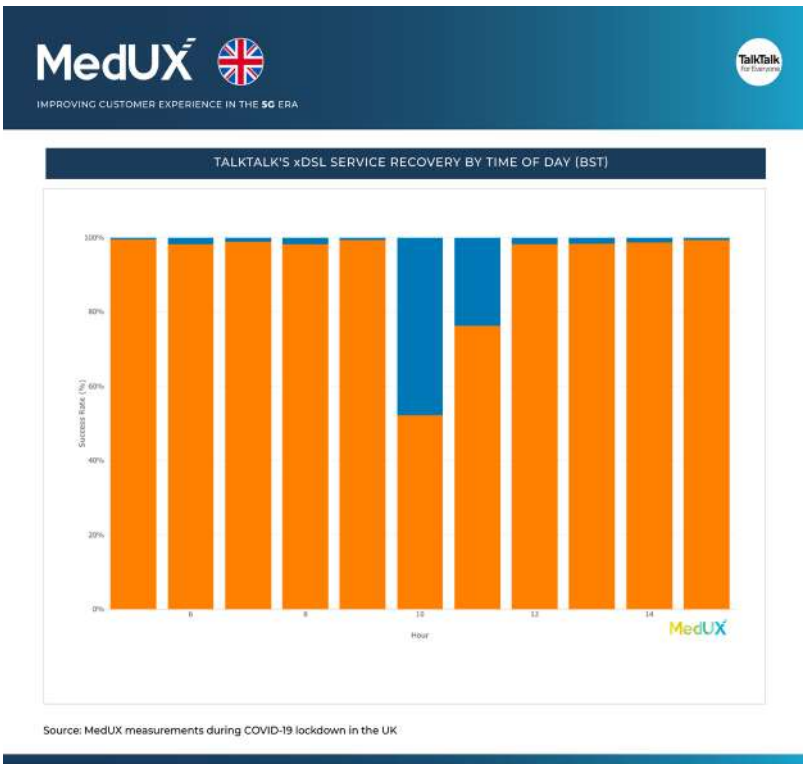
TalkTalk said the problem was fixed at around 11:30 BST, and the firm apologised to some of its customers who were "unable to access certain websites for a short period of time", according to public statements from the ISP's customer care team.

In this sense, MedUX statistics show that Facebook and Wikipedia contents were reachable, and Amazon and eBay websites were only partially affected, with an availability rate between 60% and 80%. However, other top Alexa sites, such as Reddit, Google, BBC, YouTube, and Twitter, showed availability rates well below 50%.



Please, do not hesitate to get in touch with us at marketing@medux.com to find out further details about this analysis or about the impact of COVID-19 in the UK Networks.

At MedUX we continue to work hard to improve network performance, monitor customer experience and deliver innovative solutions to support the telecommunications industry. We have made ourselves available to all British and European operators as well as government agencies to support them and do our bit to improve communications critical to the functioning of society and the economy during these difficult times and this new era.

Like what we have to say? Click here to sign up for our quarterly newsletter and Blog Posts!

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About MedUX

MedUX is the leading company in customer experience measurement in fixed, mobile and TV telecommunications networks, providing cutting-edge tools and innovative solutions for telecom operators, governments and companies.

MedUX measures network performance independently and directly from customer premises. Our analyses are based on real-time information and results obtained from 5.000 MedUX HOME devices deployed in eight countries in Europe.

MedUX HOME is a measurement device installed on customer premises that carries out automated performance tests over the broadband connection via Ethernet and Wi-Fi. Hundreds of metrics are being collected in real time (24/7) and investigated to understand how Internet service is performing in European homes. MedUX brings fixed broadband benchmarking to the next level thanks to our innovative approach that combines profound knowledge of network performance with actionable insights into customer experience.

Our solutions enable our customers to stand out from their competitors, have visibility into the true customer experience and in-home performance, reduce costs and enhance their value propositions, thereby increasing customer satisfaction, anticipating their problems and avoiding complaints.

By collecting millions of data analytics, MedUX technology helps ISPs better understand their customers and monitor service quality. MedUX gathers 24/7 information and statistics about end users' perceived experiences, which are eventually affected by the frequency, duration and severity of network events. User reports and complaints, random performance tests or simple high-level monitorization alone is not enough to resolve and prevent customer experience issues.

Our insights help our clients reduce the time to insight by obtaining meaningful information about end-to-end network performance and impacted customer services. Furthermore, our insights help our clients reduce the time to resolution by collecting detailed End-to-End performance statistics in real time and consequently responding to customer issues promptly.

Our controlled and dedicated technology offers extended root-cause analysis and powerful investigation capabilities for network events and is linked to the service/application layer and other network layers. During our intensive QoE test protocol, we collect valuable information about performance-limiting factors to help detect, isolate and determine root causes. It includes necessary path-quality information, such as throughput, latencies and packet loss, as well as other service-level information associated with web browsing, streaming and cloud storage, among others. Examples of these performance limitations are available for most monitored services or applications relating to connection time-outs, DNS resolution, destination host connectivity, network connectivity and server errors.

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