



Nokia Deepfield Network Intelligence Report Summary: Networks in 2020*

Service provider traffic and consumption trends
in the internet's rollercoaster year



* January-September 2020

Foreword



Foreword from Dr Craig Labovitz, Chief Technology Officer, Nokia Deepfield

Having been personally involved in the internet's evolution for more than 25 years, and having witnessed its major architectural changes and growth, I have been very impressed by the performance and resilience of service provider networks and the internet in this year of upheavals.

The networks were made for this. Performance across all constituent parts of the internet – service provider networks, content delivery networks (CDNs), and large content and application networks – is testament to the exceptional work of engineers, network planners, and security and operations teams everywhere.

We are seeing great examples of digital cooperation between telecom service providers, cloud providers, regulators, and governments. Now, more than ever, we need strong commitment to further network investments and to grow, connect, and secure network infrastructures worldwide to ensure resilience and lessen digital divides.

Our Nokia Deepfield portfolio of software applications has allowed service providers to understand activity in their networks in these critical times, enabling them to ensure continuity of service and create value for their customers.



Foreword from Manish Gulyani, Vice President and General Manager, Nokia Deepfield

COVID-19 has taught us that networks matter now more than ever before. They have become our lifeline, figuratively and literally. We use networks to work and collaborate, to learn, to entertain ourselves, and to communicate and stay in contact with family and friends.

As a leader in the community of network and cloud builders, Nokia has played an important role, making sure that networks delivered on all important fronts: performance, service quality, user experience, and security.

With our networks providing the underlying connectivity fabric for business and society to function, there is a greater than ever need for holistic, multidimensional insights across the network, services, applications, and end-users. One question we hear a lot is: "While my network delivered the best it could under the strain of increased demand and incredible traffic growth, can you help me get the control I need to deliver flawless service with the best possible customer experience?"

Our answer is yes. With Nokia Deepfield, service providers can obtain the necessary network visibility and actionable analytics to improve the network and service capabilities while providing customers with assured quality, enhanced security, and a reliable network environment. The data and insights we've drawn on for this report show how.

Executive summary

Networks in 2020: Key findings

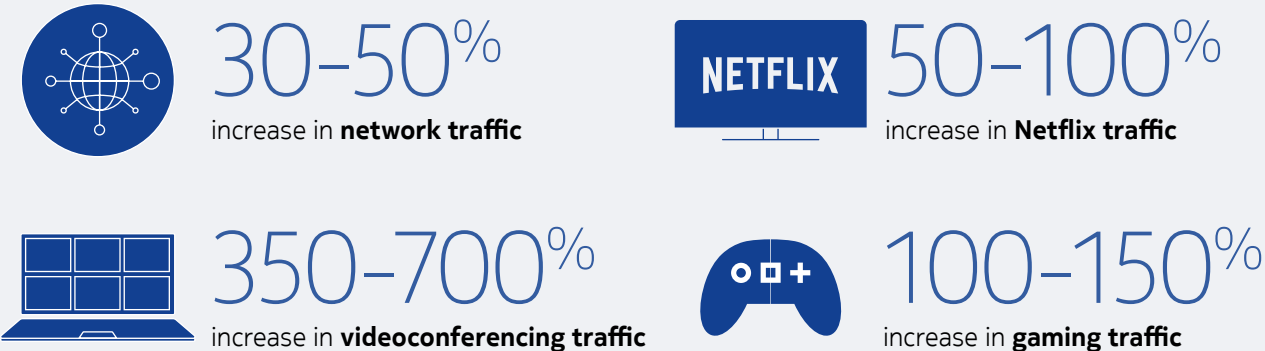
This report draws on data recorded by network service providers across Europe and North America between February and September 2020. Many networks experienced a year’s worth of traffic growth – 30–50 percent – in just a few weeks, as COVID-19 lockdown measures were implemented.

By September, the data indicated that traffic had stabilized at 20–30 percent above pre-pandemic levels, with further growth to come. However, as of the second half of October,* partial lockdowns and other public health and safety measures are being re-instituted in many countries and regions – possibly with new effects which are yet to be recorded.

* Time when this report is finalized and sent for production.

Networks in 2020: Key statistics

First weeks of lockdown compared to the previous week:



One month into lockdown:



Six months into the pandemic:



Key takeaways



#1 “[Service provider] networks were made for this”*

Despite seeing the equivalent of a year’s traffic growth in just a few days, networks were able to take the strain – a testament to the foresight and engineering expertise of both communications service providers and cloud services providers.

While networks held up during the biggest spikes in demand, data from September 2020 indicates that traffic levels remain elevated even as lockdowns are eased. The big question now for service providers is how much capacity to engineer into networks now for future eventualities – or how to get the required headroom capacity when needed.



#2 Internet-based content delivery chains are evolving

Demand for streaming video, low-latency cloud gaming and videoconferencing, and fast access to cloud applications and services all placed unprecedented pressure on internet-based content delivery paths. Just as we saw content delivery networks (CDNs) grow in the past decade, we expect the same to happen with edge/far edge cloud in the next decade, bringing content (storage and compute) closer to end-users.

Service providers have an opportunity to develop win-win partnerships with internet applications, content and services providers, and with the content delivery networks (CDNs) that host and deliver their content. To capitalize on this opportunity, service providers must have a full visibility of the internet service delivery chain, not just of their own network.



#3 Residential broadband networks have become critical infrastructure

The COVID-19 pandemic events highlighted the role of our residential broadband connectivity as vital for society. Thanks to service providers’ and cloud operators’ agility and immediate actions, people in lockdown could use their network connections to work, play, socialize, get help, and provide help to others.

The challenge for service providers is to find ways to improve overall network resilience and offer tailored work/play/connect packages. They must also address dynamically – shifting consumer needs – ranging from uninterrupted access to critical communications to soaring demand for high-bandwidth, low-latency content and services. Accelerating the rollout of new technologies – such as 5G and next-gen FTTH – that will improve access and connectivity in rural, remote, and underserved areas would go a long way toward bridging the digital gap in many societies.



#4 Deep insight into network traffic is essential

This analysis of internet traffic in 2020 provides significant insights into the changing patterns of consumption and demand in service provider networks and cloud networks. While the COVID-19 era may prove in many ways to have been exceptional, the likelihood is that it has only accelerated trends in content consumption, production, and delivery that were going to happen anyway. Recent data from September 2020 supports this notion.

By understanding network traffic trends in detail and in real time, service providers can gain more in-depth insight into evolving subscriber needs and preferences. That will allow them to develop partnerships and offers that elevate their role to providers of valuable, differentiated services.



#5 Security has never been more important

In normal circumstances, distributed denial of service (DDoS) attacks can threaten a business’s livelihood and reputation. In situations where broadband connectivity is an essential service, protecting network infrastructure and services becomes critical. In particular, the rise of online gaming has led to more and shorter DDoS attacks, often targeted at a single host, creating challenges for service providers in detecting and protecting against attacks.

The need for robust, 360-degree DDoS protection is critical. Service providers will need to find better and more cost-effective ways to detect and minimize new forms of DDoS attacks that may go undetected or unmitigated by legacy security tools and approaches.

* Dr Craig Labovitz, CTO, Nokia Deepfield, in ITU/UN webinar on broadband connectivity and digital cooperation in the time of COVID-19, 22 April 2020.

<https://www.youtube.com/watch?v=ti7G1dDW7HQ&feature=youtu.be&t=2285>

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Document code: CID 210148 (4)

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