

# Lumen<sup>®</sup> CDN Mesh Delivery for Broadcast Media

Optimize QoS during unplanned traffic spikes

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CDN Mesh Delivery enabled European broadcasters to deliver consistent, high-quality streams amid surges in viewership during the pandemic

During the first half of 2020, the largest live and VOD broadcasters in Europe had sudden and unprecedented increases in their online video traffic, seeing spikes as high as **10x their average viewership**. Such surges have been known to take down some streaming platforms due to the stress that it places on the network, but Lumen CDN Mesh Delivery customers were able to weather the storm thanks to the traffic being distributed across the peer-to-peer delivery network.

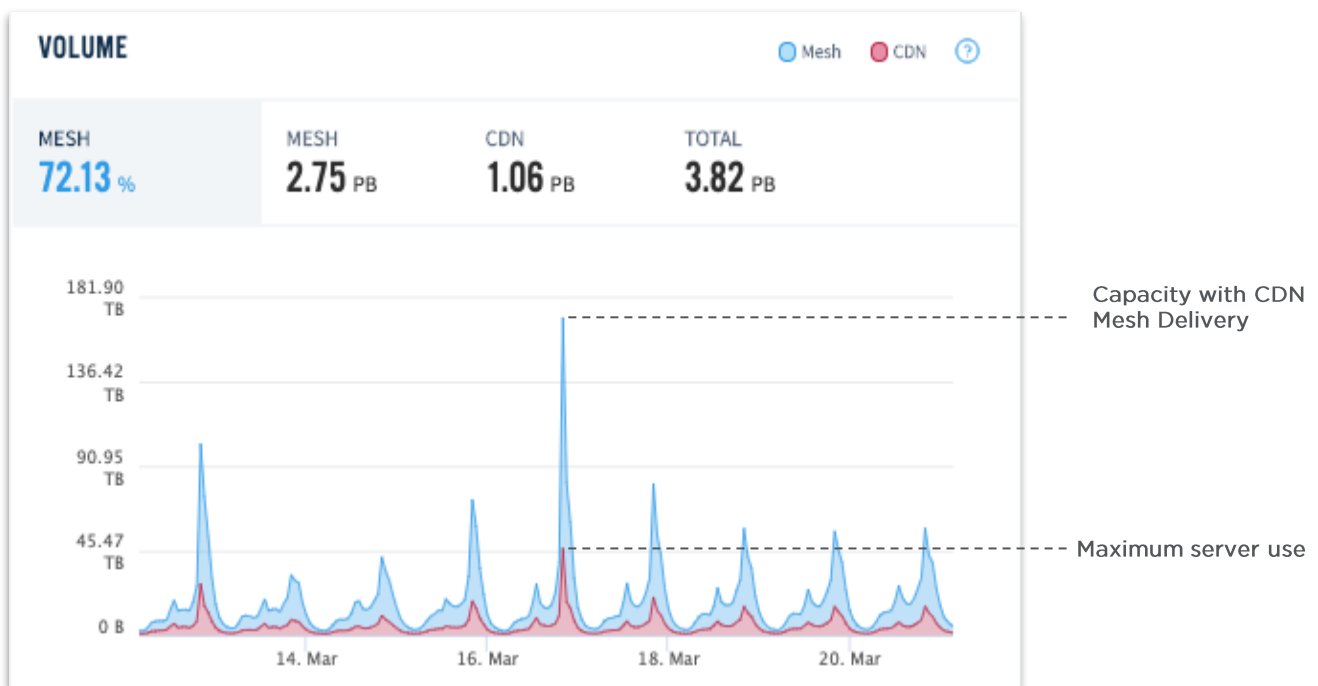


## A distributed approach to content delivery

As a hybrid peer assist solution, CDN Mesh Delivery acts as an overlay on top of any existing CDN infrastructure to provide the network with the necessary flexibility to rapidly scale to traffic spikes like the ones we saw in the first few months of 2020.

Powered by the WebRTC protocol, the peer-to-peer network turns viewer devices into mini edge servers, allowing other viewers watching at the same time to get portions of the content from those devices rather than only from the CDN. In doing so, it simultaneously helps to lighten the load placed on the CDN as well as improve quality of service as traffic increases.

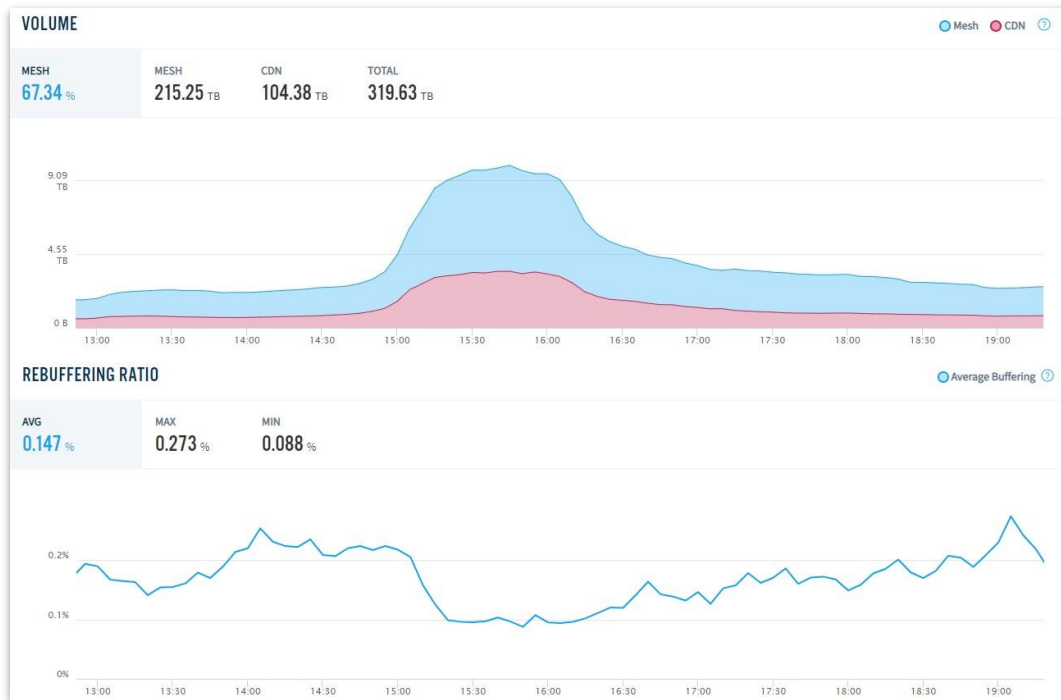
We saw this play out in multiple instances during the early days of the outbreak. Speeches made by European leaders drew massive audiences on streaming devices, for which the broadcast operations teams were unable to plan ahead and provision their CDNs accordingly.



Lumen customer data; March, 2020

One European TV network saw such a spike several times in March of 2020, none more significant than during French President Emmanuel Macron's speech to announce stay-at-home orders. Over 70% of the traffic on that platform was able to be distributed onto the mesh network, minimizing the risk of significant problems in their delivery and costly overages on their CDN bill.

Looking more closely at President Macron’s speech on March 16, we see that as traffic started to rise, instances of rebuffering in the video stream actually went down due to the traffic being distributed onto the mesh network, where viewers did not have to rely on an overcrowded server, but could get the next video segments from other devices streaming the same speech.



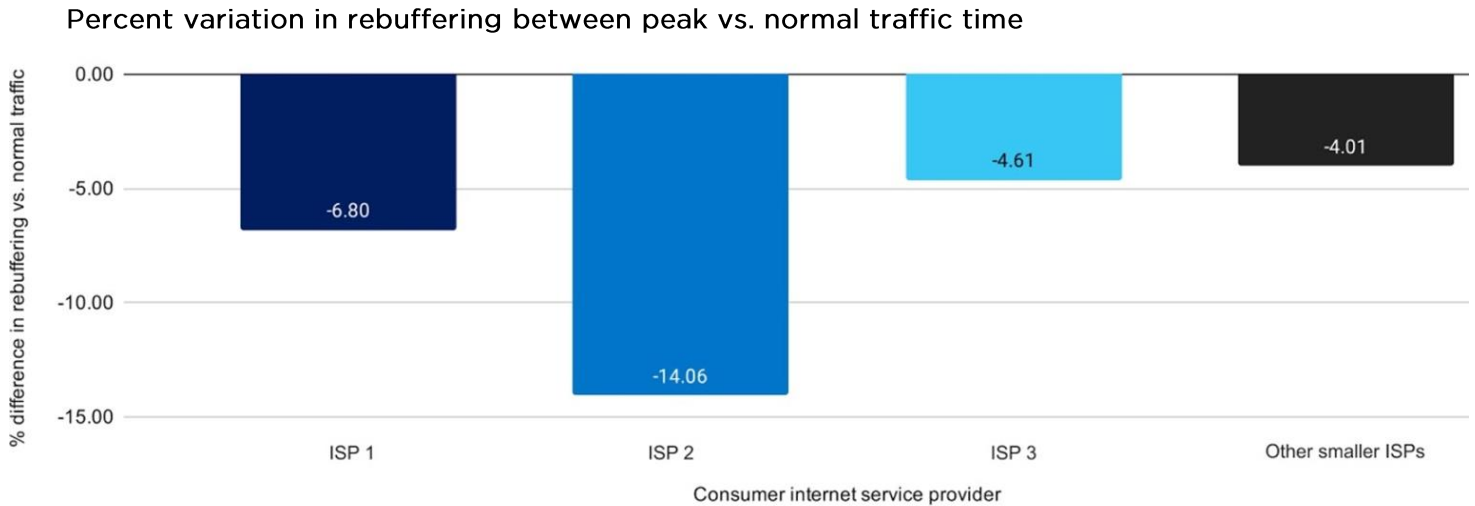
Lumen customer data; March, 2020

## Key Metrics:<sup>1</sup>

- 75.5% of the total content delivered to users at peak times was done via the mesh network
- At peak traffic, rebuffering ratio dropped by 50.1% from monthly average
- Peak mesh bandwidth was 48x the average CDN bandwidth for March

<sup>1</sup>Metrics are gathered from a single broadcaster for the month of March

We see more evidence of the effect on performance by drilling down into ISP data for the March 16 speech. In looking at the three major consumer ISPs plus a handful of smaller providers (altogether accounting for 95.5% of viewer traffic on devices where CDN Mesh is deployed), instances of rebuffering decreased across the board as viewership rose to peak levels:



Lumen customer data; March, 2020

CDN Mesh Delivery is designed to select the most appropriate content source for each device within the peer-to-peer network, but is also customizable based on several different parameters. Broadcasters are able to configure sharing among end users based on **device type**, **content type**, **region**, **country**, and **ISP**. For example, you can adjust the parameters to accommodate peering arrangements between network providers by ensuring that content is only shared among devices that are connected to the same ISP or specific ISPs.

Additionally, CDN Mesh Delivery can be configured based on **activation ratio** (i.e. only turning it on for a specified percentage of your viewers) and **network types**.

Regardless of the sharing parameters though, broadcasters can be sure that the addition of new content sources will help increase capacity for delivery and improve performance for your end users.

## Why Lumen

From content acquisition to storage, encoding and distribution, Lumen end-to-end video delivery solutions address your platform's multifaceted needs from a single provider. Benefiting from more than 15 years of experience tailoring CDN solutions for some of the largest global enterprises, Lumen serves eight of the world's ten largest media companies.