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WHITE PAPER

Market Pulse

Networks Under Siege

The Impact of Hybrid Work and Increased Video Conferencing

As employees move to a mix of remote and on-site work, organizations must take steps to mitigate the impending crush of live video traffic on the network.

EMPLOYEES WILL START RETURNING to offices this year, but it won't look like the pre-pandemic work environment we remember. A hybrid model, with a mix of remote and on-site workforces, seems likely to prevail.

A full 75% of executives anticipate that at least half of their employees will be working in the office by July 2021, according to the **January 2021 PwC Remote Work Survey**, and 68% said that employees may be in the office at least three days a week to maintain company culture.

Video for enterprise communications has emerged as a critical tool to connect workers during the pandemic. On average, live video usage grew 45% in 2020, according to a recent IDG Market Pulse survey. Considering the ongoing likelihood of remote work, most organizations will continue to depend heavily on video conferencing.

This shift will significantly tax enterprise networks when employees return to the office and are unable to gather in meeting rooms or auditoriums to watch live streams due to physical distancing limitations. Enterprise video is a bandwidth-heavy application, and its effects are magnified when each employee participates in a video conference individually.

For example, if an office has 250 employees who are all viewing a CEO town hall livestream from their desks, each will request and receive the content individually from the source. Multiply that video stream by 250, and the network will exceed capacity, resulting in event failure — or worse, an impact to business-critical applications. Organizations would need a staggering amount of bandwidth to accommodate these one-to-many video conferencing traffic spikes.

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IDG

IDG Communications, Inc.

Ready, test, go live?

IT managers are aware of this impending crush. According to the IDG survey, 93% say they have tested their networks and:

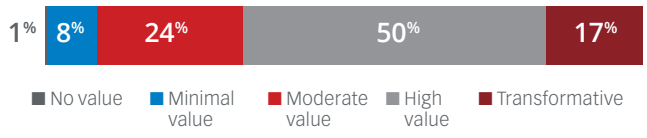
- **59%** expect a modest to moderate impact on their networks
- **28%** say the impact will be significant

However, it's likely they are understating the problem. When tests send pings across the network between two endpoints, they're usually looking at time to live (TTL) and round-trip time (RTT). It's more difficult and less common to simulate the load that a 720p video stream at scale causes. The ramp rate for the data is extremely unpredictable, and a load balancer's ability to scale when you've got a large meeting is hard to simulate.

Content distribution at the edge

An enterprise content delivery network (ECDN) browser-based peering platform will substantially reduce the additional load that the increase in office-based video will bring. With browser-based peering, just one copy of the live video comes through the office internet connection. This copy is then shared via peering with users at the edge—providing a real-time experience for end users. It's also a compelling option for IT managers, with 99% saying it provides value over their current systems *(see Figure 1)*.

Figure 1. Value of Browser-based Peering Solution vs. Existing System



Source: IDG

Applying ECDN to the business

So, let's revisit the "all-hands" video livestream. Instead of piping in 250 video streams to each individual machine, the ECDN will recognize the duplicate requests for the same data. The first user to access the content will act as a distribution hub for the office, pulling data in and then sharing it to their neighbors over the internal network. The end result is a reduction in the number of streams passing through the internet pipe from 250 to one.

Even more compelling: This model for content distribution uses infrastructure that is already in place. There are no clients to install on end-user devices, no additional hardware to deploy, and no need to purchase additional bandwidth.

These peering platforms can also leverage existing security protocols for permissions, such as those already built into Microsoft 365 Suite. Authorization can be provided through the identity provider to ensure content is only shared with those who should have access.

Finally, ECDN browser-based peering can be provided via an infrastructure-as-a-service model, which creates peering meshes in real time, spun up when needed and turned down once the video stream is complete. It's like building a highway in front of cars as they arrive at rush hour that disappears once traffic is gone.

Mitigating the return-to-work video crush

The hybrid model for work will predominate once the pandemic recedes and the world begins to approach "normal" once again. One-to-many live video conferencing will remain an important communications tool, just as it was during COVID-19.

Organizations must take measures to mitigate the impact of live video on their networks now or risk the consequences of failing to do so as employees return to the office. Browser-based peering is the simplest, most cost-effective solution to optimize your network for live video.

For more information, visit kollective.com

Xbox Uses Peering

Microsoft uses a version of browser-based peering technology to distribute games for their Xbox console. When a hot new game is released, instead of sending it to every kid on the block at the same time, the Xbox file sharing platform, Pando, distributes it via one or two users to all their friends. This reduces the network load, enabling everyone to get their game faster.