

Preparing Your Enterprise Network for the YouTube Generation

Millennials, Video, and CapEx

MILLENNIALS HAVE GROWN up with the ability to produce and consume video anytime, anywhere. So as the workforce becomes increasingly millennialized, short-form video will become as commonplace in the enterprise as PDFs and PowerPoints.

Live video webcasting will also grow as a means of communicating with and engaging a dispersed millennial workforce.

Few enterprise networks, however, can deliver high-quality video to multiple end-points simultaneously. In fact, multiple copies of any bulky content—including video, Big data cubes, large PowerPoints, and software downloads—will inevitably hit multiple choke points as they stream over the WAN, in from the cloud, and down to the desktop.

Enterprise network managers therefore face a three-fold choice:

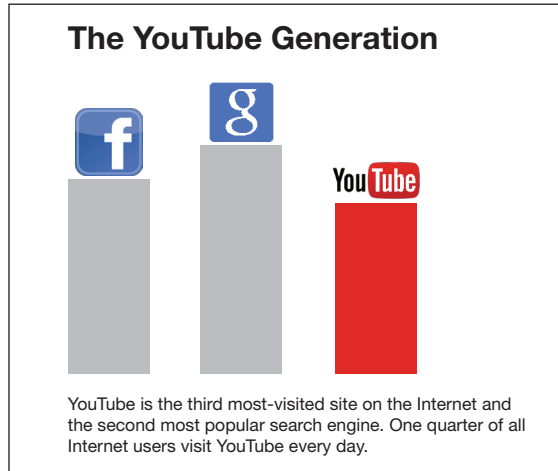
1. Limit the ability of people to use technology for the benefit of the business
2. Engage in capital- and labor-intensive upgrades of network infrastructure
3. Embrace a more technically elegant and economically reasonable solution

This white paper suggests that the third course of action is the wisest—and that it will generate multiple worthwhile long-term business benefits for those who choose it.

WILL THE YOUTUBE GENERATION KILL YOUR NETWORK?

Next to face-to-face meetings, video is the most powerful communication medium there is. Study after study shows that video significantly outperforms static text and/or graphics when it comes to delivering messages and engaging an audience. Human beings are neurologically wired to respond to motion, audio, and human faces. So corporate leaders who want to inspire their employees—and make sure everyone is on the same page when it comes to marketing strategies, organizational goals, and regulatory compliance—are well-advised to make video a core component of their corporate communication programs.

Video is especially important for communicating with millennials. Millennials have grown up with



pervasive video on their TVs, on the Web and on their smartphones. They have made YouTube the Internet's No. 2 search site, surpassed only by Google. They have also flocked to video-enabled social media such as Facetime, Skype, Snapchat, and Vine. To optimally engage Millennials, corporate leaders must therefore be diligent about leveraging video as a medium for corporate communications.

This optimized engagement is essential. A recent Gallup study revealed that 70 percent of American workers are “not engaged” at the workplace—with millennials even less engaged than their baby boomer or Generation X peers. This subpar engagement means they are not performing to their potential, not pouring their energy into delivering a great customer experience, and not devoting themselves to corporate objectives. By improving engagement, systematic use of video helps corporate leaders overcome this common, productivity-sapping workplace challenge.

This engagement challenge is why 89 percent of corporate leaders say video is important for their internal communications programs—and 72 percent plan to increase their use of video this year—according to a survey conducted by Ragan Communications.

And it's not just “top-down” communication that's going to increase enterprise video usage. Millennials have grown up with the ability to create videos at their fingertips, so they will certainly bring employee-generated video into the workplace—much to everyone's benefit, since short-form video is so effective for sharing ideas and information.

There's just one problem: Most corporate networks can't support live executive webcasts or extensive on-demand video streaming. In fact, when asked what their top problem is when it comes to effectively using video in their organizations, technology managers invariably cite network-related problems—including poor performance and long download times.

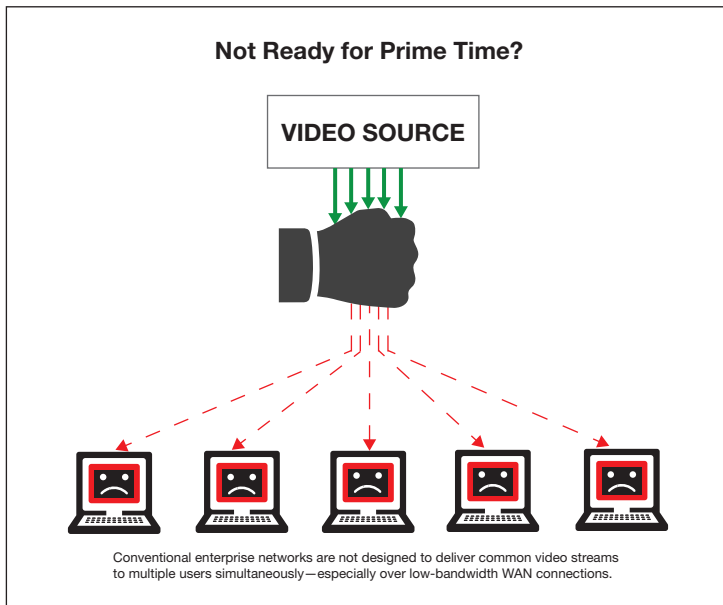
Given the growing importance of video as a medium for employee engagement and collaboration, technology decision-makers typically perceive themselves as having two equally problematic choices:

- Make intensive capital investments in network infrastructure. This choice is problematic because IT budgets are limited, and network build-outs can be extremely expensive. They can also take a long time to complete and make significant demands on IT staff throughout the entire planning and implementation process. So, while video is certainly of potentially tremendous value to the business, the cost of such build-outs greatly diminishes ROI.

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- Defer or forego broader use of video in the enterprise. Finding network build-outs too costly, many organizations are putting broader video adoption on the back burner. This choice is problematic because it impedes business performance—and, in the long term, is likely to have a significant adverse impact on a company's ability to compete.

Fortunately, technology decision-makers have a third and far superior choice that enables them to gain the benefits of enterprise video and avoid disruptive, capital-intensive network build-outs.



With a software-defined ECDN, every desktop node can act as a secure content server.

THE SOFTWARE-DEFINED ENTERPRISE CONTENT DELIVERY NETWORK

Enterprise Content Delivery Networks (ECDNs) are distributed systems that improve an organization's ability to deliver "bulky" content that places greater demands on bandwidth than does typical data and Voice over IP (VoIP) traffic.

Conventional ECDNs use distributed servers or specialized appliances to facilitate content delivery. Software-defined ECDNs, however, offer a far greater value by leveraging a company's existing infrastructure. This software approach eliminates the need to purchase, implement, and manage any additional hardware or WAN bandwidth.

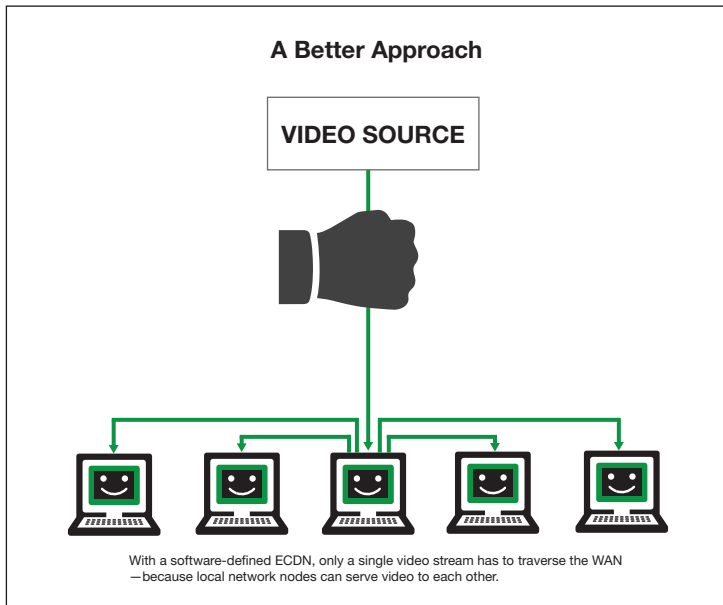
Ideally, a software-defined ECDN will provide three key functions:

Optimized use of existing infrastructure

On the typical enterprise network, desktop computers act only as receiving nodes. They typically receive video content by connecting to a central server through multiple routers and switches—and, if that server is in another location or in the cloud, through a limited-bandwidth WAN connection. If multiple users want to view the same content, multiple video streams are sent over that same physical infrastructure. Given the bandwidth consumed by video, these multiple streams quickly cause network congestion. The result is a bad video experience and/or interference with the performance of other critical applications.

With a software-defined ECDN, every desktop node can act as a secure content server. This ECDN

model allows users to get video from a nearby desktop computer via a LAN connection with plenty of available bandwidth—thereby avoiding congestion on low-bandwidth network “choke points” and ensuring a high-quality video viewing experience.



Topology and congestion avoidance

A software-defined ECDN is only useful if it has the built-in intelligence to detect network topology and retrieve content from the closest possible source—starting with the user’s own subnet and then working outward from there. This topology-aware approach minimizes utilization of congested “north-south” network routes in favor of high-bandwidth “east-west” routes.

Topology, however, is not the only factor that determines the optimum path for the transmission of video or other bandwidth-intensive content on the network. The saturation of network links is another. An effective software-defined ECDN should also be able to detect indicators of link congestion and lengthening switch/router queues (such as round-trip times for synchronize/acknowledge traffic and packet loss rates) to avoid further burdening already over-saturated links.

Adaptive, policy-based content traffic management

To squeeze the best possible video performance from the enterprise network under even the most challenging conditions, an ECDN must be able to dynamically capitalize on whatever bandwidth resources are available for any given video stream requested by any given endpoint at any given moment.

As noted above, this opportunistic optimization requires that the ECDN be capable of detecting the closest/best peer node for retrieving target content. However, a software-defined ECDN can also apply policies to optimize content delivery in other ways. For example, it can dynamically “inject” portions of a given video stream into different network paths as spare bandwidth becomes intermittently available on each one to collectively provide the best performance and the biggest possible local buffer cache. An effective ECDN should also be able to enlist multiple nodes on the same local subnet to cache different portions of the same video—and then re-assemble those portions so that all local users can enjoy a good viewing experience. These types of content delivery techniques can succeed where conventional bandwidth reservation or prioritization alone cannot.

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WHY UPPER MANAGEMENT SHOULD CARE

Corporate leaders are grappling with a variety of technology-related challenges today—including big data analytics, the rise of mobility, and better mitigation of data-related risk. So it makes sense to ask why they should elevate implementation of an ECDN to the top of their IT to-do lists.

There are several good answers to this question:

- *Avoidance/deferral of major capital spending.* By significantly extending the useful life of an organization's existing network infrastructure, a software-defined ECDN enables an organization to achieve its IT-related objectives without having to part with large amounts of cash.
- *Video enablement of the enterprise.* Organizations that fail to harness the power of video as a communications medium will put themselves at a fundamental competitive disadvantage versus those that do. Software-defined ECDNs are the single best way to avert this potential disadvantage.
- *A more engaged millennial workforce.* Recruiting, retaining, and motivating millennial talent is a central challenge for any organization hoping to survive and thrive in the coming decades. A video-enabled network is essential for meeting that challenge.
- *High ROI for other technology investments.* An ECDN facilitates delivery of other types of content—including the large data cubes that organizations more frequently have to deliver now to multiple remote and offshore users for analytics, development, and testing.
- *Facilitated use of the cloud.* The cloud offers compelling economics when it comes to hosting video, large data sets, and other content. But its usefulness can be limited by bandwidth constraints between users and cloud providers—unless an organization uses an ECDN to cost-effectively overcome those constraints.

For these reasons and others, organizations that want to ensure their network can meet the needs of the business over the next several years without costly and disruptive overhauls of its underlying physical infrastructure should strongly consider adopting software-defined ECDN technology.

To learn more about how the Kollektive's SD ECDN solution can prepare your network for the YouTube Generation, visit www.kollektive.com/kollektive-ecdn.com, or request a meeting with one of our experts at kollektive.com/#talk-to-an-expert.com.

ABOUT KOLLEKTIVE

Kollektive Technology uses the power of Software Defined Networking (SDN) to bring immediate value to enterprise IT. From its software-defined enterprise content delivery network (SD ECDN) that powers millions of enterprise desktops to its edge-empowered tools such as Network Readiness Testing, Software Delivery and Network Analytics, Kollektive drives powerful ROI and makes the flexibility of SDN a reality.

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