CASE STUDY:

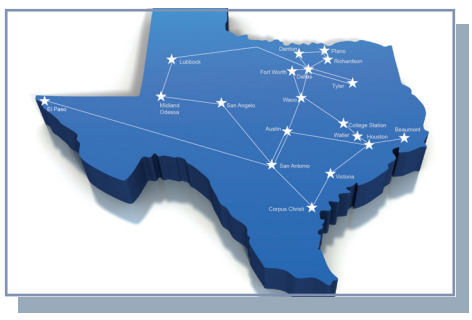
DEVELOPING A VIDEO OVER IP BACKHAUL SERVICE for Occasional Use

The Company

Texas A&M University has a rich history of utilizing the Internet for live event backhaul. Examples of the these occasional use events include graduation ceremonies, Aggie Muster, and numerous other special events hosted on the flagship campus or from Regional campuses throughout the great state of Texas.

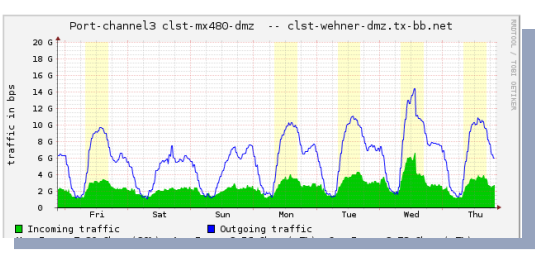
In fact, as early as 2002, live classroom video sessions were being IP unicast bi-directionally between the TAMU remote campus in Doha, Qatar and back home in College Station. Over the years a wide selection of video over IP devices were deployed with various levels of measured success.

In other words, the Texas A&M University IT & video engineers already know a thing or two about high quality video over IP.



The Challenge

Fast forward to 2016 and inevitably there are more and more live video services needing backhaul from campus locations both local and remote. What becomes obvious is that almost every event location has available unmanaged Internet access. Let's emphasize that the university network is unmanaged.



In the TAMU domain, this means available ad hoc bandwidth is unknown and varies with the event location, time of day and day of week.

Within this unmanaged portion of the network bandwidth it becomes impossible to carry ad hoc video services without first measuring the available bandwidth ahead of time. And even if this measurement can be done with enough precision to configure IP video encoders, there is no guarantee that the bandwidth will be available for the duration of the event.

Moreover, pre-scheduling reserved bandwidth for occasional use backhaul is impossible because of cost, delays and complications.

The Solution

Recent work within MPEG has resulted in the published standard for adaptive bitrate video over IP using HTTP, otherwise known as MPEG DASH ISO/IEC 43009-1. To those familiar with Netflix, the new standard normalizes how to adapt video bitrate to variable network bandwidth in real-time. Typically, when the user starts Netflix the video gradually increases in quality until a maximum is reached. As the available bandwidth varies so does the perceived video quality, which when compared to traditional video over IP devices is noticeably missing macro blocking and dropouts. This adaptive bitrate technology is a key element in the solution to TAMU's problem.

Nothing can guarantee bandwidth over unmanaged data networks but what can be controlled are the resulting artifacts. Generally speaking, when network congestion spikes, then traditional IP encoders will introduce macro blocking and dropouts, whereas the innovative Path 1 PiXiE adaptive bitrate based codecs will introduce soft compression artifacts.

PiXiE assures superior quality user experience relying on advanced standards-based technologies for efficient and speedy compression of video (i.e., 720p/1080i/NTSC/PAL), in addition to supporting all 16 audio channels plus ancillary data.

The PiXiE encoder requires almost no setup other than the network interface and the maximum encode bit rate, further increasing operational efficiency for Media General's DR. Using one or more PiXiE decoders and the IP address for the PiXiE encoder, Media General can simultaneously pull video across the shared public Internet at the highest possible quality.

"Our team has been using the Path 1 PiXiE codecs for two years. We find them to be very reliable and simple to operate."

Wayne Pecena, Director of Engineering Texas A&M University

PERFECT VIDEO OVER IP

Contact Path 1 Sales@Path1.com for datasheets, evaluations and recommendations.