



Conviva is a technology start-up developing the next generation media distribution platform. Our core technology is based on pioneering research work done here at Carnegie Mellon and University of California at Berkeley.

We are here today to discuss the impact that digital media will have on the Internet, impact that is already being felt, and is expected to significantly increase in the near future. This impact has generated a lot of stress for major stake holders in digital media, including the content providers and the network service providers. While there are definitely issues that need to be resolved by policy organizations like FCC, we believe that next generation technologies can go a long way to alleviate the stress, and create win-win outcomes for major stake holders including content owners, network providers, and consumers.

First, let's talk about the impact of digital media on the Internet. You probably are all familiar with this, but I just want to make sure that everyone is on the same page. Imagine 10 million households watching one hour of video at the current iTunes quality, where downloads are spread out over six hours — which means that if you forget to push the download button right after lunch, you won't be able to watch the movie after you put your kids to bed. Even such a scenario would require about 750 Gbps capacity — more than the capacity of the largest ISP backbone today. This is a lot of data, but we could easily see the demand increase by a few orders of magnitude. 200 million households watching high definition video for 2.5 hours would result in about 1000 times the traffic.

Large media is expected to significantly change the make-up of Internet traffic. For those with a networking background, the elephants will dominate the mice.

The traditional data center delivery model has difficulty scaling to meet even current demand for video content. With significant investment, data centers can be scaled up, but place strain the network's capacity at all levels, sometimes putting content providers at odds with network providers.

The expense and difficulty of distribution by data center gave rise to peer-to-peer distribution systems. There are two independent aspects of the peer-to-peer systems I'd like to note. First, traditional P2P systems allow any user to publish, which leads to the abuse of systems such as piracy of content. However, this is not inherent to P2P systems and can be solved by technical means. The second aspect, which is the technical strength of P2P systems, is their potential to serve large amounts of traffic in a scalable fashion. However, today's P2P systems make inefficient use of network resources, and introduce uncontrollable and unpredictable hot points in the network.

They make traffic management difficult for network providers, and largely provide poor quality of service to consumers.

We believe that today's server-based and P2P systems are not the only options. Policy decisions should not be based only on today's technologies. Innovations on the horizon can play a big role in alleviating the conflicts created by traditional means of content distribution. The goal of more network-friendly distribution is achievable. Conviva's system does real-time coordination and control of available resources, utilizing the spare capacity near the network's edges and preventing hot points at bottlenecks. This allows for efficient use of resources and higher quality of service.

Conviva's mission is to enable content owners, consumers, and network providers to benefit from the explosive growth of Internet video by revolutionizing the mechanism, the experience, and the economics of video distribution. We are using technology to build a sustainable video ecosystem for all parties involved.