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The Battle for Video

By Jesse Cryderman

A headline in the news in late April read "Will the Royal Wedding Break the Internet?" By press time, we will know answer, but the underlying question is "how many simultaneous video streams can networks handle before they buckle?" This is a question that never would have been asked ten years ago, and one that highlights a dramatic shift in modern video consumption.

There is no doubt that the video landscape has changed dramatically over the past decade. Ten years ago television programming, for the most part, was available on one device—a television—and outside of theaters, the main conduit for movie viewing was either rental from a brick and mortar store, or through premium cable programming. DVD sales and rentals were high, retail outlets like Blockbuster were doing great business, and

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a friend who had HBO, Showtime, and Cinemax usually had lots of other friends.

As soon as networks evolved and prices dropped, enough people moved from dial-up to broadband to enable development of streaming media services (intrepid media pirates used broadband for this purpose almost from beginning). Wireless networks followed suit, driving similar advances in mobile video applications. This changed the video game entirely.

Thanks to the technology of today, video can be delivered and/or viewed on a multitude of devices, purchased from a similarly wide array of providers, and enjoyed wherever and whenever a person desires; and the impact on the video market is nothing short of amazing. Blockbuster is now bust, having sold to the Dish Network after failing to emerge from bankruptcy. NetFlix went from a small, single-disc-by-mail DVD rental service in 1999 to the largest subscription entertainment business in the US [based on 1Q2011 earnings]. Traditional cable companies are facing stiff competition from over-the-top providers, while internet businesses like Facebook, Amazon, Hulu, and Apple are constantly striking and re-striking deals with major television networks and Hollywood studios to have the latest, largest, or cheapest video catalog.

And the impact on networks similarly dramatic.

Video—and now high-definition video—has become the largest drain on both wireless and wired networks around the world. According to recent data, video accounts for over 50% of total U.S. internet traffic, Netflix alone accounts for more than 20% of the internet traffic in North America, and globally, real-time entertainment

accounts for 43% of total internet traffic (Sandvine Global Internet Report). The problem in the wireless arena is even more severe, as the pipes become quickly clogged when user demand skyrockets. As the Sandvine Global Internet Report revealed, real-time entertainment "is unquestionably the dominant driver of data consumption on fixed and mobile networks worldwide."

This all boils down to one word for those in the infrastructure support and development industry: opportunity.

Taming the bandwidth hog

One of the main strategies internet and cable providers are using to control bandwidth (even as they sell "unlimited" service), is through data caps or throttling. Sometimes these policies are adequately described in user account agreements, and other times they caps are not, resulting in public relations nightmares (AT&T, Verizon) and occasionally even class action lawsuits (Clearwire). Regardless, virtually every major CSP now employs some type of data cap or throttling to limit the bandwidth usage.

So what's the workaround for consumer who wants to continue to stream high-quality video all month long, and providers who want to keep consumers happy but have limited resources?

The first solution lies in a variety of compression and optimization technologies. Sometimes these are incorporated on the delivery end, other times on the consumer end, but they all basically do the same thing: compress and optimize a video stream to maximize efficiency and latency given a particular connection speed, bandwidth, and screen-size scenario.

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Not to be outdone, some OTT providers are pursuing this strategy as well. Netflix has already engineered its own workaround strategy for users in Canada. They now offer a low-bandwidth option for Canadian customers to help them dodge their bandwidth caps.

Personalization to the rescue

Instead of looking at bandwidth limits as roadblocks, they should be seen by carriers as opportunities. Another strategy that could solve and monetize the video dilemma is personalized or a la carte video packages. These lie in the policy and billing layer, and allow a user to select services or bundles that reflect their

preferences with greater specificity. Cable companies are already offering this, but on a limited level (gameday packages, premium channels) and they don't offer true a la carte programming. Consumers who are big sports fans, for instance, but who could care less about the other 75 channels on basic cable, might be inclined to purchase just the live game package if it were an option.

For the internet service provider who doesn't have a play in programming (unlike Comcast), but who does want to control bandwidth, customized "per service" packages should be developed, in which customers pay for exactly what they want. They could even reflect historical patterns back to the user to increase personalization. Imagine a scenario in which a customer could see, from their online account manager, that they watch about 10 movies on Netflix per month, and could then tailor their internet package around this consumption, versus a flat rate for a number of gigabytes (which doesn't readily translate into the amount of programming available for the price).

Real time solutions for real time problems

Another direction that is being pursued and will probably be the final destination further down the road is real time policy and billing control. This technology opens the door for applications like predictive upselling and real-time premium incentives.

Predictive upselling employs finely honed historical usage

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pattern algorithms to anticipate which programming a user might be interested in and create incentives for similar programming in real time. For instance, a user who watches American Idol could be prompted to watch the show on their mobile device as it goes live (although this scenario is unlikely because Idol fans know when the show airs). As an incentive, clicking on the link to view the show would result in a 50% reduced impact to the monthly bandwidth cap. Or identified fans of a particular band could be notified when new programming was available, along with a promotional incentive.

Real-time premium selling capitalizes on the bandwidth crunch by offering service hungry customers priority access when networks start to sweat. Let's say you have reached your bandwidth cap, but you want to—no, you have to—watch a romantic comedy with a new special someone. Instead of a night ruined by latency, a pop-up offers you real-time access to that single movie stream for an additional $2.00. Or a text message alerts you to the fact that your bandwidth cap is at 80%, and for an additional $10 you can purchase another gigabyte of

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high-speed access.

While this evolution in the wired world has yet to take off, we already see this happening in wireless, and especially with data plans for the iPad. AT&T sends bandwidth cap alerts and allows for real-time bandwidth purchase for their data packages, for example.

A third option that realtime enables is off-peak usage prompting, like a toll-road that's cheaper after rush hour. If, say, I wanted to watch Hulu during primetime, a pop-up would prompt me to watch the program three hours later for some incentive, like reduced data cap impact, a free premium trial, or extra monthly bandwidth. In this way, carriers could maximize their overall network efficiency while creating new revenue streams.

Mobile offload

In the mobile world, the impact of video has put a massive strain on networks and created room for solutions framed around this problem, and besides boosting raw capacity or stream compression/ optimization, data off-load is the go-to answer. There are still many plays here for OSS vendors, even as many solutions exist in the market. The latest research by Juniper predicts that "the majority of traffic (63%) generated by Smartphones, Tablets and Feature Phones will transfer onto the fixed network via Wi-Fi and Femtocells by 2015. This means that the annual mobile data traffic offloaded from operators' networks via WiFi and Femtocells is forecast to reach nearly 9000 petabytes (PB) by 2015, which equates to a voluminous 11 billion movie downloads."

Report author Nitin Bhas underlined the importance of these findings: "As a high percentage of mobile data consumption occurs while indoors or in motion, operators have an opportunity to offload data traffic onto complementary fixed networks via WiFi and Femtocells. Offloading also has the potential for creating new services and applications and enhancing the usage of existing services."

Based on this research, and several other reports, the general consensus is that mobile data offloading will grow to become a very large segment of the telecommunications industry, and video data is a prime driver for this evolution.

Cord cutting

While the same cannot be said for voice, despite all of the changes in how video is delivered and consumed, far fewer consumers are "cutting the cord" (replacing traditional cable video service with over-the-top alternatives) than originally predicted, and the rate of adoption is trending much lower than expected. This is due in large part to the fact that major events in sports, entertainment, and politics are still only broadcast live through traditional television. Additionally, it seems users are accustomed to the passive nature of television, as opposed to the active interaction that is required by most OTT options.

This leaves ample time for cable companies to re-tool and compete on personalization and customization, as well as depth of programming, of which they are aware (to wit: weekly news reports of cable companies striking deals with television and movie studios and sports teams).

But OTT players are also aware that live programming and original media are key differentiators, and have begun to strike deals for exclusive original content. Netflix announced an exclusive 26-episode contract with a television show starring Kevin Spacey and produced by David Fincher. Google took similar action via its video darling YouTube, announcing a YouTube-only feature-length film starring Rosario Dawson, Danny DeVito, and Josh Hartnett. And Facebook is dipping its toe into first-run video rental and partnered with Major League Baseball to stream pre-season games at no cost, and allow users to purchase a $120 subscription for regular season game access.

So who is winning?

Set-top OTT boxes have not gained traction, and are a failure for companies like Google, who trumpeted Google TV as the paid TV slayer, but the exponential rate of growth in online and wireless video means the story is just beginning. Netflix has certainly capitalized on evolving consumer habits the best, but no cable-free solution has yet matched the passive pull and original content pipeline that paid TV offers. In wireless, the mobile data offload play is huge for OSS vendors, and

will only continue to grow. In the meantime, as content deals are hammered out daily between everyone from the cable company to Facebook, enterprising vendors and carriers can rely on greater personalization, customization, and real-time solutions to gain market share and better profit from their businesses.

Final thoughts

Few people could have imagined that something like a feature-length movie would one day be available at any time, anywhere on their computer or mobile phone…or Zune, iPod, or tablet. Even better, who could imagine that access to an entire video rental stores back catalog would be available in realtime for $10 a month, or a cable bill would no longer be the only ticket to paid programming. Really, it's consumers who are winning today, and fierce competition in the video market continues to enable better services. Time will tell if Netflix will go the way of Blockbuster. Perhaps in ten years major content developers will be folded into the delivery and service companies. At each turn in the journey, though, the infrastructure plays are significant in enabling the future of video.