



Mobile video moves from short clips to full-length features. How networks can deliver.



Executive Summary

Streaming movies: Giving online audiences what they're asking for

Since the introduction of 3G nearly ten years ago, video has grown to become the world's dominant data-generating application in mobile networks. Video streaming today makes up 39% of global mobile data traffic, with peer-to-peer file sharing generating just 29% of mobile data traffic in 2011.

Both applications are growing, but while file sharing grew at a rate of 33% between 2010 and 2011, video streaming shot up by 93% over the same period. YouTube is a big part of this story, making up 52% of global mobile streaming video traffic in 2011.

The figures might be impressive but none of this is really news, so why pay special attention to video streaming now? The answer is the rapid rise of online streaming video services that deliver long-form movie and TV content, such as Netflix in the Americas. Netflix alone already accounts for 30% of the fixed internet traffic in North America during peak times, and the company is expanding aggressively into other regions.

Communications service providers (CSPs) need to start paying attention to this over-the-top (OTT) streaming business model, which uses their networks to serve up high-quality feature-length video, demanding far higher capacity and quality than the sort of YouTube clips that previously dominated streaming traffic .

While popular OTT services such as Netflix, Hulu and Amazon have arisen from the fixed-network arena, a similar model is also emerging over mobile networks. In addition to popular Netflix apps now available in the US for Apple and Android smartphones and tablets, US cable channel HBO has launched an app that allows existing HBO customers to stream programs to their Apples and Androids at no extra cost. One million users, 5% of HBO's total customer base, downloaded the app within a week of its launch in May 2011.

Rewarding experience

Embracing data services can be very rewarding. In advanced markets such as the US and Japan, some CSPs make half of their total revenue from non-SMS data services. Since video streaming is already 37% of global mobile data, this means that it already accounts for roughly 18.5%, or nearly one-fifth, of mobile data revenue in these countries. CSPs that provide the capacity and quality to deliver a good movie-watching experience will be best positioned to generate new revenues from this new end user behavior.

The first step is to ensure that the network is capable of handling the demands of long-form video streaming. This requires capacity and coverage

planning with video in mind, aimed at achieving a good- or excellent-quality video stream for most customers, most of the time.

With a strong network in place, the CSP is then well placed to think about how to further monetize OTT video. If the network can't provide the right quality, however, no one will even want to use it as a bitpipe.

When one CSP in Southeast Asia decided to attract new subscribers to a recently upgraded network by dropping its prices, for example, a leading competitor attempted to halt the resulting churn by dropping its prices to match. But without the improved coverage and capacity in place, the rival's network quickly became so congested that it was forced to put its prices back up to discourage the extra traffic. Great networks are a prerequisite for competing successfully in mobile broadband generally, and video streaming in particular.

Unlike peer-to-peer file sharers, people who watch video over broadband tend to behave in quite a predictable way. For example, Netflix customers typically watch just under 10 hours of video per month – or around one movie each weekend. That predictability is good news for CSPs, who can then make well-informed assumptions about likely streaming demand as the basis for their rate plans that include video streaming. Finding the right balance of data allowed and money charged is central to making the delivery of OTT services both attractive to end users and profitable for operators.

Capacity estimates

Around 7% of the US and Canadian population subscribes to Netflix, and an estimated 10 million further people watch videos on free ad-based OTT provider Hulu. If a similar pattern applies in mobile streaming services, an extremely rough estimate of the maximum impact on networks would be 7% to 10% of current users streaming 10 hours of video per month. On a smartphone, delivering 10 hours of streaming over HSPA at a good level of quality (440 kbps encoding, as tested in the Nokia Siemens Networks Smart Labs) generates just about 2.4 GB of new data per month. Good-quality video on a tablet is encoded at about 1240 kbps, which comes out to about 6.8 GB of new data per month.

It is, however, unlikely that users would transfer their entire video-watching patterns to the mobile space. Mobile video watching in mature markets will most probably be a more mobile and more personal supplement to the more shared and stationary fixed big-screen video streaming experience. In emerging markets with poor fixed connectivity, mobile networks may actually become the primary source for OTT video services. So it's good news that when we look at today's networks, we find that they are, in many cases, already adequately prepared for delivering long-form content. A network with 20 MHz HSPA, for example, can today support viewing two full-length movies on a tablet (at about 3.5 GB) as well as two movies on a smartphone

(about 1 GB) per month in addition to other data usage – depending on the amount of data in the rate plan, of course.

And when we add LTE to the network mix, we find that this really opens up the possibilities. With LTE, networks can easily support four full movies on a tablet (about 6.75 GB) per month, or more, for subscribers to a Netflix-style service. This might even still leave room to view a few tv shows on a smartphone as well – again, depending on the amount of data in the rate plan.

But delivering an increased quantity of OTT streaming data needs to be managed at more than just the radio level. Strategic decisions must be made about how much OTT streaming the CSP will encourage and allow. These decisions lead to the use of a wide variety of different tools to help shape the extra data traffic. An upgrade to LTE, Wi-Fi offloading, and optimizing the delivery of video in the network increases the radio's capacity and number of simultaneous viewers, while traffic-shaping options such as QoS and policy control, in combination with pricing plans to encourage “just enough” video, are key for monetizing the additional traffic. Solutions that reduce the demand that streaming video places on the network, such as caching video closer to the end user, are also potentially useful. More use of femto, pico and micro cells will continue to increase the power and quality of networks.

The best combination of these and other solutions will vary depending on each CSP's chosen mobile video strategy. The only thing CSPs really can't afford to do is ignore OTT video. Companies that are unprepared for the extra traffic will be forced to offer mobile data price plans at high cost or low data caps to discourage the use of OTT video in their networks. These companies will also miss out on the additional revenue.

Liquid Net: Matching capacity to OTT video demand

Online movie viewing on fixed networks tends to peak in residential areas on Friday and Saturday evenings, creating high demand in areas that typically see relatively low traffic flows during weekdays. If this pattern of consumption is repeated in mobile, this will be the kind of demand that demonstrates the need for the capacity flexibility and fluid demand response that the Nokia Siemens Networks Liquid Net approach is designed to meet.

Liquid Net enables network capacity to flow and fulfill demand wherever and whenever people use broadband.

Liquid Net creates networks that can adapt in an instant to changing customer needs, using existing capital investments more efficiently and generating entirely new revenue opportunities. Liquid Net also uses automated, self-adapting broadband optimization to deliver the best customer experience by always being aware of the network's operational status and the services being consumed. In addition, Liquid Net channels traffic in the transport network along the path of least resistance and lowest cost between sites.

Liquid Net creates fluidity seamlessly and intelligently across the entire network infrastructure, not just in radio access or core network components.

Business strategies

Once it has the right network in place, each CSP then has the freedom to choose which strategy it wishes to apply to the specific question of OTT video.

- **Focusing fully on high quality internet access.** Let users select their choice of content available via the open internet, including any OTT video. Support this choice with suitable networks and rate plans.
- **Offering own-brand online or OTT video.** This requires licensing premium, desirable content that can then be offered to subscribers or as an OTT service for any customers in the marketplace. This can be a differentiator and revenue generator in its own right.
- **Partnering with OTT video providers.** In this case, the CSP pools resources with those of the OTT product to create a more attractive package for the end user. This could include the operator becoming an aggregator of various OTT services in the market when more than one is available, or enhancing OTT services with easy access to value-adding CSP services such as instant messaging or access to Facebook. The CSP may also offer a certain level of guaranteed quality for a certain site at a slightly higher fee (subject to net neutrality rules in the market), or use its customer insight to create movie recommendations based on past viewing, or suggest that a viewer download content instead of streaming when they're close to their monthly data quota.
- **Providing business services to OTT video providers.** In this scenario, the CSP provides Content Delivery Network (CDN) services to OTT providers or charges OTT providers to guarantee a certain minimum video quality. This creates a new business in which CSPs receive revenues not only from the downstream end user, but from the upstream OTT provider as well.

Transforming strategy into reality

Mobile video has been talked about for a long time, but it's only now that the key enablers for long-form content have all come together. Viewers want movies and tv on demand for simple and affordable content and connectivity fees. Nokia Siemens Networks can help CSPs deliver, from initial consulting and planning, to carefully crafted network improvements and the full implementation of own-content or OTT-partnered services. For the full picture of our online video capabilities, see figure 1.

Whatever OTT delivery strategy a CSP chooses, Nokia Siemens Networks has the solutions to transform the strategy into reality. Our Ubiquity Multi-screen TV solution can help them further monetize licensed content by offering OTT video to viewers beyond their mobile customer base, as well as delivering streamed video to multiple screens owned by the user.

NSN building blocks for a complete online and OTT video solution supporting the entire range of possible strategies

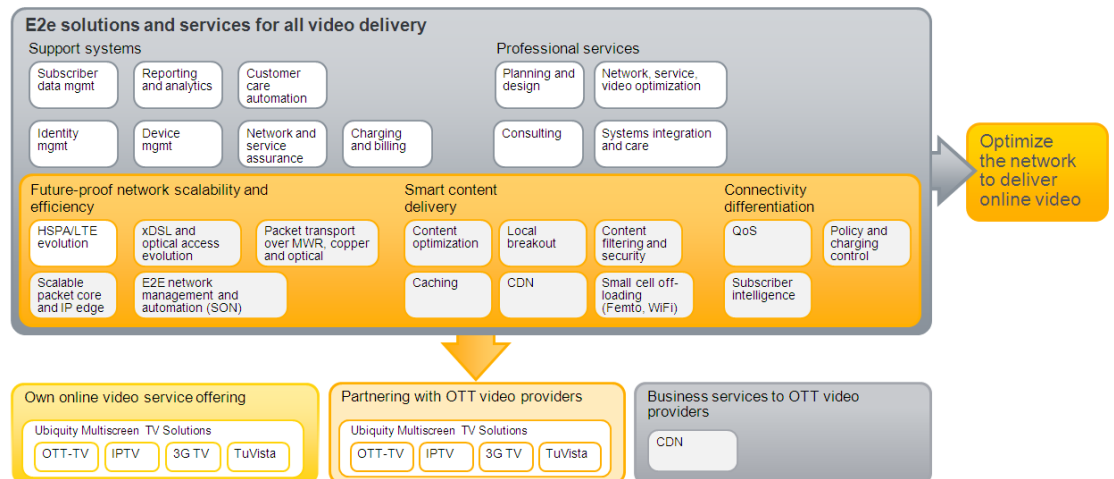


Figure 1. The Nokia Siemens Networks Online Video delivery portfolio

Nokia Siemens Networks solutions can also enable CSPs to blend their current offerings with online video in attractive mash-ups of video plus services such as messaging, chat, social networking, on-demand viewing, personalized recommendations, and more. We are able to help CSPs leverage their existing customer care and billing infrastructure to provide effective and proactive help and single bills for their entire portfolio of online video services. And of course our network expertise will guarantee the baseline quality necessary for all mobile video offerings to succeed.

OTT is here to stay. As an industry, we've been waiting for this for a long time, and finally all of the elements for creating a successful mobile video business are in place: the right content business model (flat monthly fee), the right mobile device (tablet), and the right network (LTE). The wise CSP will accept and leverage this new business model for long-form content delivery, which end users find so attractive, and proactively plan how best to deliver and monetize it.

So embrace video! It's a revenue generator when the network is ready for it.

Nokia Siemens Networks
P.O. Box 1
FI-02022 NOKIA SIEMENS NETWORKS
Finland
Visiting address:
Karaportti 3, ESPOO, Finland

Switchboard +358 71 400 4000 (Finland)
Switchboard +49 89 5159 01 (Germany)

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