Media Strategies and Solutions, LLC
Jim C Williams
President and Founder
MediaSandS
Hollywood Centered with a Worldwide Focus

Clouds and Home Networks
Friends or Foes?

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The continuing expansion of cloud-based services *will* impact the deployment and evolution of home networking… but how? Will new cloud-based services make home networks irrelevant? Will improved home networking negatively influence the demand for cloud-based services? Will they clash or complement? Are they friends or foes?

Relationship of the cloud-based services and home networking models

With respect to movies and television, the two models address the same problem of giving consumers access to content when, where and how they want it. The home networking model assumes that content needs to be moved around the home to the device that the consumer is using. The cloud-based service model assumes that there is sufficient raw communications capacity available from the "cloud" to the device that the consumer is using, thus eliminating the need to have persistent copies move about a home network.

Cloud-based services concentrate complexity in the cloud. Home networks concentrate complexity in the home. Each instance of a cloud-based service chips away at the complexity that would otherwise be required of a home network for that application.

Trends in home networking and cloud-based services

Historically movies and TV have entered the home through an application-specific path or media, e.g., broadcast TV antenna, cable, satellite receiver or DVD. The content was then converted by the tuner, set-top box or player into an audio-visual signal and connected to the TV or Home Theater system. Over the past decade or more consumer electronics (CE) and computer (IT) companies have been working on various home networking solutions, from IEEE-1394 (Firewire) to MoCA to wired Ethernet to wireless Ethernet, among others. Content protection systems have been created to manage copying, redistribution and in some cases more advanced usage models on these networks, e.g., DTCP-IP, DVB-CPCM, Nagra Media PRM and various digital rights management systems (DRMs). At the same time, many traditional Conditional Access Systems used by PayTV operators have taken on DRM-like capabilities to allow for persistent protection within the home.

Recently, there have been several initiatives that have been "cloud-based", i.e., they have moved complexity from the home to the cloud. For example, the US-based cable operator Cablevision decided to implement a Personal Video Recorder (PVR, aka DVR) in the head-end, the so-called Remote Storage DVR. Content is stored remotely and streamed to the individual user when they are ready to watch it. This takes the complexity of a TiVo-like PVR from the home and moves it to the cloud. RecordTV implemented a similar system in Singapore using Free-To-Air television. In general, if an audio-visual service is "streaming", as opposed to "download", it is cloud based. However, there are some services that may include download, but from a rights management standpoint are cloud-based. The Ultraviolet system of the Digital Entertainment Content Ecosystem consortium is one such system. When you purchase a movie, a rights locker in the cloud keeps a record so that you don't have to buy a movie twice if you wish to load it onto two incompatible devices. Additionally, the "TV Everywhere" and "HBO Go" systems being offered in the US are a type of a cloud-based service, where the rights and provisioning to separate devices is managed from a head-end and not from within the home.

With cloud-based services, the home network still needs to have enough capacity to move the content from the Internet modem to the device near the consumer, but perhaps not as much complexity. The trade-off for moving complexity from the home to the cloud for the consumer is the need to have always-on, high speed broadband and coming to grips with the associated privacy and control issues. These issues alone will likely ensure a continuing role for home networking as the cloud-based model continues to grow.

Regarding whether one model will win over the other

One should not assume that one model will eventually kill the other model. There is actually a continuum of possible solutions between these two models that are finding their place in the market. An example of a hybrid approach is a whole home PVR that serves movies and television to light-weight STBs throughout the home. Now imagine connecting the whole home PVR over the Internet to a cloud-based service like Ultraviolet. Additionally, imagine that one of the devices in the home is a portable device with its own storage that could load a movie from the PVR to watch while traveling in a plane. This architecture is an amalgam of the cloud and home network approaches where devices take on different roles at different times for different purposes.

Regarding DRMs and content protection

DRMs and other content protection systems are used to manage consumer use of movies and television in accordance with rights granted by content owners. The difference for cloud-based systems versus home networking systems is where the rights management function is located… in the cloud or in the home. The same essential

problem must be solved. And since the eventual systems that are successful in the marketplace will likely be a blend of the two approaches, both the cloud and the home networking content protection problems need to be solved.

Conclusion

Cloud-based services and home networking are both useful tools to help solve the business need of giving consumers access to content when, where and how they want it. Business and technology strategists would be well-served by understanding the continually evolving interrelationship between these two models as they craft their future systems and services. The best consumer offerings will likely use both clouds and home networks.

About the author

Jim Williams is President and Founder of Media Strategies and Solutions, LLC (MediaSandS).

Jim is the former SVP & CTO of the Motion Picture Association of America, Inc. (MPAA), where he worked closely with Warner Bros., Disney, 20th Century Fox, Universal Pictures, Paramount and Sony Pictures to advance movie and television producer's interests throughout the world.

Jim is also a former executive with DIRECTV leading the startup of DIRECTV Japan, the launch of the first US nationwide HDTV service and STB development.

Jim holds 15 US patents and numerous foreign patents, has won six Emmys and has delivered over fifty addresses on five continents. Jim serves on the Board of Directors of Mastermedia, International.

About Media Strategies and Solutions, LLC

Media Strategies and Solutions, LLC was founded in 2010 to bridge the traditional divide between technology providers and major media producers.

We believe that unnecessary business, technical and legal risk plagues many content-related business initiatives. Such risk is fueled by failure to understand and address competing time-to-market and copyright protection concerns and leverage common business interests of these parties.

MediaSandS is uniquely positioned to bridge these divides and lower business risk for its clients.

Contact: jimwilliams@mediasands.com