



Multi Screen Video Delivery The Benefits, The Challenges

A SeaChange White Paper

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Multi Screen Video Delivery: The Benefits, The Challenges

Follow the money

Over the last ten years network operators have invested billions of dollars in expanding and improving their broadband networks, both fixed and mobile. Mobile network operators have invested in fixed line networks. Fixed line networks have invested in mobile networks, either as MVNOs or as infrastructure owners.

In 2009 the retail marketing message was all about broadband speed – 20Mb/s, then 50Mb/s and even 100 Mb/s have been marketed through technology advances such as DOCSIS 3, Fibre To The Home (FTTH), and Long Term Evolution (LTE or 4G).

As the competition for broadband speed has intensified, the consumer has found it increasingly easy to move with ease between service providers for voice, internet and video services. Regulators have supported this flexibility with local loop unbundling, number portability and a raft of other policies that have allowed consumers to move with ease between providers. As a subscriber churns away from one service provider to another provider, so too does their spending and the aggregate cost of customer acquisition is increased.

The Challenge for Customer Retention

For the many operators that provide triple play, or quad play services, retaining customers across all offerings is a matter of tremendous importance. While a customer is happy to stay with a television service, he may churn away from the mobile service because another provider has a cheaper price plan.

Price bundling of multiple services has always been a popular way of promoting customer loyalty, increasing ARPU and engendering a 'stickyness' to the service, whereby it becomes harder and harder for the subscriber to move away from the service bundle for economic reasons. A price-bundled service offering can help to promote loyalty, but without a direct connection between the services, that makes the bundle greater than the sum of its parts, it will remain attractive to churn from one ISP to another, one mobile contract to another, due to price without losing service functionality.

The aim of a Multi-Screen video and shared content service is to make the total service proposition, and all devices that touch it, part of the 'whole home infrastructure' where all the consumption devices are linked to the service and the service itself is unique to the provider.

Let's hear it for the modern day Jones's

The Jones's are a typical Multi-Screen family. From a single service provider they subscribe to a television service that gives them VOD, HD and PVR on two televisions. They also take a bundled broadband service for the three computers in their home. Their mobile phones, 4 in total, are on a Family Pack post-pay subscription plan with the same service provider.

Their service provider has rolled out a Multi-Screen service that allows all of the Jones's to enjoy the television they have paid for on all of the connected devices they own or use. Dad loves to be able to search for sports content and watch previews on his PC and mobile phone, and set the PVR to record, before he watches the live game in HD on his TV. Mum watches the back catalogue of Desperate Housewives through VOD on the TV, and the current episodes live or on Catch-Up VOD. But as the TV switches for the live game she pauses the VOD session to continue it later on her iPhone. The children love being able to watch new episodes of Glee and High School Musical on their phones, bookmark individual episodes for later viewing on TV or computer, and forward the link to their friends through Facebook. They start watching on one device, finish on another, and interact with their community and the service platform through a third.

Each Jones enjoys the integrated experience of being able to access the content they pay for on the device of their choice. The barrier to entry into the Jones home for any service provider – television, data, and mobile - has just become a whole lot harder.

This experience generates whole service loyalty, allowing the service provider to increase basic subscription rates confident in the knowledge that only they can provide this integrated experience.

An Intelligent Video Solution

The Multi-Screen proposition allows the subscriber to access particular categories of content from multiple viewing devices, dependent upon the content rights that have been licensed. Using a single sign in and registration process, the subscriber is able to set up his account and register different devices to access the various parts of his service. Typical usage cases are for Music, Catch-Up TV and Movies available from the TV, mobile and PC player. The usage patterns across the different devices are likely to be very different, so a way of linking the viewing and presenting this to the subscriber well is imperative.

An Intelligent Video Solution would offer this flexibility and convenience. When Mrs Jones pauses the episode of Desperate Housewives in HD on the TV VOD service, the VOD back office software creates a bookmark against that episode for her. Later that evening she can pick up the show from the point where she left it earlier. This time the show will be delivered in wide screen format to her iPhone using adaptive streaming. When she decides that she has had enough she can pause again. The system will rewrite the bookmark in the database allowing Mrs Jones to continue with the viewing on the home computer in the morning. Access to the content through the computer is

through login and password. The login can be from any machine, with the content delivered as a flash movie within the service provider's video portal.

The business rules are flexible allowing the content to be viewed again within a grace period (dependent upon content rights) resumed from a bookmark, preset positions or started again. The service can be customized to allow access from multiple set top boxes registered to the subscriber's address and identified by their MAC addresses, a single or multiple mobile phones identified by phone number and IMEI Number (International Mobile Equipment Identity) and computer by application sign in authentication.

Allowing service access by application sign in alone (no client hardware identification) increases the risks of fraudulent use, where the subscriber shares his login details with others, but greatly increases the flexibility of the system. Application sign in allows a registered subscriber to consume content wherever he is, on whatever computer he is using, whether at home on-network or elsewhere. For pay by title Transactional VOD (TVOD) content the risk is fairly constrained, as each view is billed to the account holder. In the case of Subscription VOD (SVOD) where the user can watch as many titles as they want for a fixed monthly fee the service can be constrained to a single stream available at any one time, a range of computer MAC addresses, a particular broadband access line or IP address range, dependent on the desired business model the service provider wishes to pursue.

The content is tailored specifically to the device the subscriber is using, for example in the case of the set top box, if the box is HD capable, High Definition H.264 content will be delivered. For the mobile phone a 320 x 240 3GPP version of the content and for the computer a Flash or Silverlight video will be streamed. Business rules are available to allow simultaneous consumption from multiple devices, allowing whole family usage, or locked down to a single device at any one time. The subscriber can select an asset to view from any of the devices registered, and play the asset from the start, or where the asset has been viewed previously the user will be offered the chance to resume or start from the beginning.

An Intelligent Video solution would manage separate catalogues for each device type. This allows a subset of content available elsewhere on the service to be presented as appropriate. The user interface presented on each device can also be different and customized for the limitations of the display. It is unlikely that an operator will have the same content rights for all devices.

Typically one bookmark is created per title, with an unlimited number of titles available simultaneously with bookmark positions registered. The bookmark is persistent for the life of the purchase window (set as a meta data attribute against that piece of content), and can be accessed and played from any of the registered devices.

Where content is transactional, i.e. pay by title TVOD, the bookmark duration and viewing window may be set as low as 24hours, for SVOD content, where the assets have in effect been pre purchased the bookmark duration and viewing window could be days or weeks.

Architecture

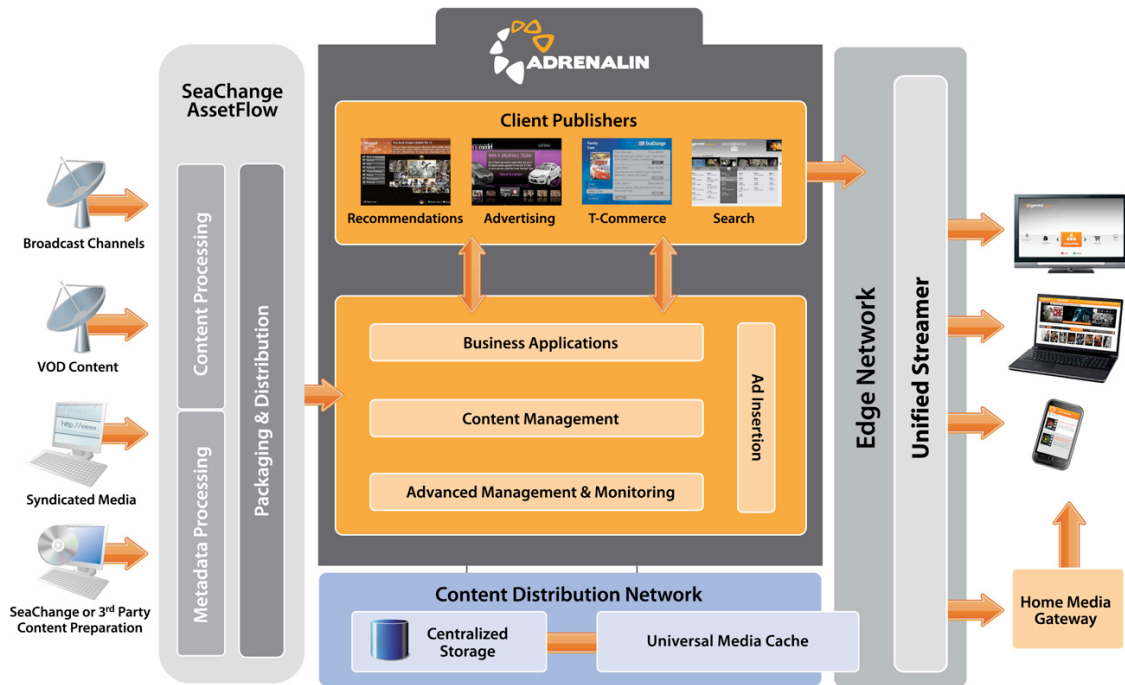
The solution would ideally have a central Publishing back office component, that is content, device and account aware. All the consumption devices – TV, PC and Mobile phone – run applications that have the ability to identify themselves to the central back office component, either through hardware identifiers or user name and password sign on. The content selections and categories are published into the device UI using Ajax style HTTP transfers, from a common central content line up and catalogue system.

Business rules are associated to each piece of content and content category allowing the operator to set up the access rights, access methods and payment criteria for each piece of content and which devices it can viewed on. For example a re-run of a sports event may be available on the TV in HD as a pay by title asset, free in SD as part of a sport package for the following week and only available the day after on the mobile, and no rights available for online. All these access rights, windows and pricing models can be accommodated using a single piece of metadata associated to the asset. The content catalogues, access rights, subscription package and pricing will be checked and verified before the content is published to the requesting device. This allows great flexibility in the offering, content management and publishing to each device in the household.

Content protection and DRM can be applied to various classes of content on a device by device basis, for example AES or Windows Media encryption to the iPhone / Mobile Phone, IP DRM or CA to the set top box and RTMPE encryption to the Adobe Flash player.

Dynamic Asset Management and Delivery

Each device requires the appropriate content server or CDN link to deliver the required content to that device. For a set top box this would be a VOD streamer, for a PC or tablet computer this may be Adobe, Apple or Microsoft HTTP streamers, and for mobile devices this would be an RTSP server. The content required for the Multi-Screen implementation can become cumbersome to produce especially where adaptive streaming is employed. The content for a single asset multiplies by the number of bandwidths required. For an adaptive streamed iPhone, 2 different screen resolutions of 3GPP, HD and SD TV and 2 resolutions for the PC flash player will require 8 different versions of the content to be generated and streamed. Ideally an automated and scripted content encoding solution and metadata management system would have to be architected with a variety of encoder vendors to automate this process and streamline the whole content creation / ingestion / QA process.



Supported Formats: Adaptive HTTP, HTML 5, Adobe® Flash, MPEG-2, MPEG-4/H.264, Microsoft® Silverlight, Apple® QuickTime and more

SeaChange Adrenalin – Multiscreen Video Platform Architecture

This product would manage the encoding automation, the metadata package and delivery and workflow processes required to prepare the On Demand content. Multiple off line versions of the content are produced from a single high quality input file, using individual profiles to generate a work flow schedule for each of the different output files. The system would automate this delivery of metadata to the Product Offer Management System which assigns business rules as well as posting the metadata to the publishing engine. It also orchestrates the transfer of content out to the origin server. For Time Shift TV services, the system would receive linear schedule data from the 'live' schedule EPG feed, and allows programs and events to be marked, and scheduled for capture and instruct the record operation on the server. Ideally the same encoding automation system would be used to transcode the TSTV contents into the multiple formats required.

An Intelligent Video Solution would bring a centralized service management capability to the service provider looking to deliver a consistent proposition to its subscribing customers.