PREPARING FOR THE NEXT GENERATION OF VOD TECHNOLOGY – A CONTENT PROVIDER'S PERSPECTIVE

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Abstract

Video on Demand has advanced from a simple process of managing 50 hours of movie content with 7 day lead times to a robust collection of long form and short form content with lead times reduced to hours instead of days. Add to this the next generation of VOD functionality that will provide capabilities that could increase the amount of assets to be distributed and managed significantly putting greater demands on providers' Asset Management and Distribution Systems and processes.

This paper explains and illustrates how VOD has changed in the past 4 years and where it is headed based on certain trends and new capabilities introduced by the next version of the CableLabs VOD specification. This paper examines the impact these advances will impose on content providers and how they can prepare for it in the future.

BACKGROUND

In the past 4 years, TVN has seen the amount of VOD content distributed grow at a steady and predictable pace. In April 2001, TVN began pitching VOD content to its first commercial VOD site with approximately 50 hours of movie content with an average run time of around 100 minutes per title. That was soon followed by the launch of approximately 300 hours of SVOD content from the premium networks with average run time of around 70 minutes per title. Then, in October 2002, TVN began including VOD content from cable network providers. We ended the year with approximately 250 hours of free On-Demand content with average run times of approximately 54 minutes each. Today, the TVN network distributes over 3000 hours of content a month from these and other VOD categories with average run times of approximately 49 minutes each.

Delivery lead time is defined as the amount of time that a title must be pitched from TVN and caught by a VOD site before the view start date of that title. In the beginning, having only feature and library content to deliver, the VOD delivery process required delivery lead times ranged from 7 to 10 days. As more time sensitive content, such as current events, highlights from recent sporting events, etc., was added, we now have some delivery lead times reduced to as little as 6 to 12 hours.

Most of TVN's content growth is a result of adding over 70 content providers to the mix of aggregated programming available through TVN. Under the current CableLabs 1.1 VOD asset structure, where a package contains one metadata file, one to two MPEG files and possibly a graphics file, this volume equates to between 5,000 and 10,000 files a month to be distributed and managed by TVN. If you consider that at any one time, these 5,000 to 10,000 files may be multicast to between 80 and 100 sites at once, that equates to an average of 675,000 distributed files managed per month.

Knowing the current simplicity of a VOD offering that contains a single version of a title at a single price, we have been able to accurately predict the rate of increase and scale up our support systems and operations accordingly. Our next task, however, is to examine the new capabilities introduced by the next generation of VOD and plan accordingly.

NEW CAPABILITIES FOR VOD

Currently, the majority of VOD installations operate under the bounds of the CableLabs 1.1 VOD specification (CL1.1). The next version of the specification, CableLabs 2.0 (CL2.0), will introduce much needed flexibility in forming, distributing and offering content. Following are a few examples:

Breaking up Asset packages - An intended feature of the new specification is to allow a content provider to break up a CL1.1 asset package into individual elements and assign individual window dates to each element. Each package element can now be introduced to a VOD system independently and live on its own. For instance, a content provider would have the capability to efficiently distribute and display the preview or poster art of an offering before the movie is made available for viewing.

The diagram below shows the difference between the capabilities using CL1.1 versus those capabilities using CL2.0.
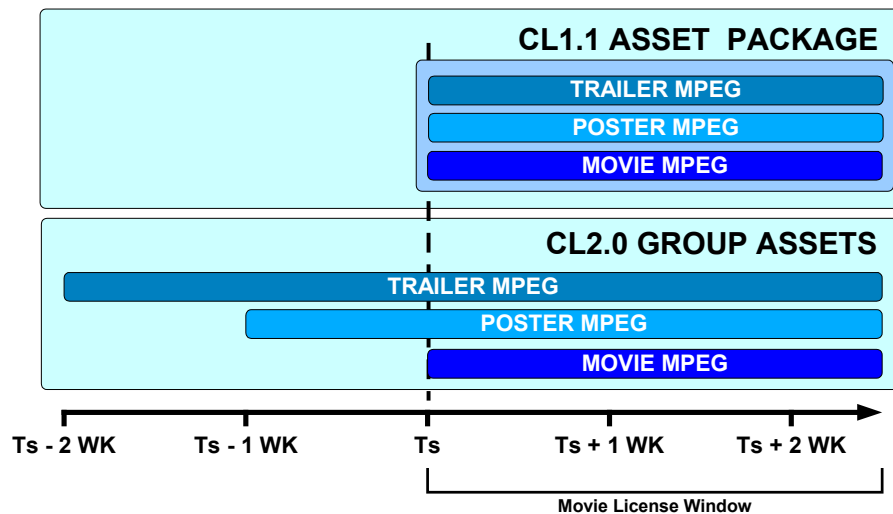
Under the CL1.1 scenario, the viewable window dates of each element of the asset package opens at the same time at Ts. However, under the CL2.0 scenario, in this example, the preview and its metadata is introduced at Ts – 2 weeks, the poster art and its metadata is introduced at Ts - 1 week, and the movie asset is introduced at Ts.
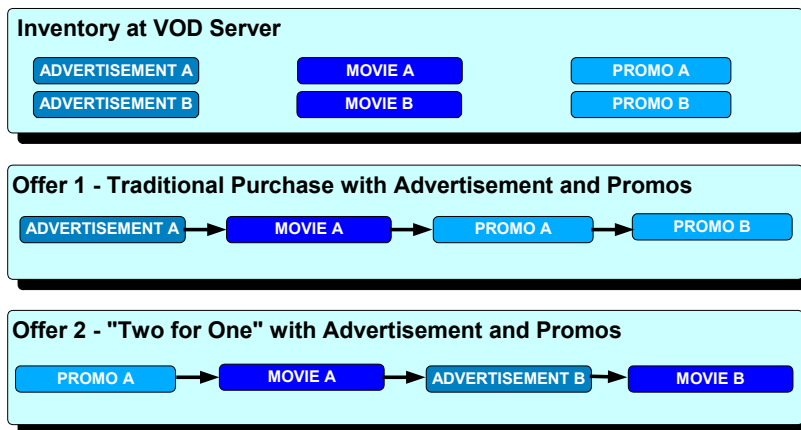
This simple but useful concept will allow for the promotion of upcoming VOD titles with the goal of increasing awareness and buy rates for the movie asset.

Using Playlists to Insert Ads – The playlist concept has been around for many years and is a very versatile tool that will allow content providers, and eventually consumers, to specify a list of individual MPEG files and a sequence in which they

should be played out. This one feature alone will create an enormous opportunity to dramatically change the way VOD programming is being offered today. Even though there is more work to be done to define business rules, resolve potential billing system issues, etc., playlists offer a huge potential in the ability to create unique and appealing offers to consumers. One opportunity for both content providers and MSOs is the ability to gain additional revenue through placing advertising within a VOD offering. Additionally, a single asset can be shared across many playlists allowing for create marketing and pricing discount schemes such as "two for ones" and "many for one" offerings based on a common

attribute of each piece of content such as genre or actor. In fact, the person defining a playlist can pick from a number of assets that have been placed on the VOD server, and, within the bounds of business rules agreed to by the Content provider and the MSO, create a multitude of different offers.

For example, you might have two ads, two movies, and two promos that a content provider has placed onto the VOD server. In Offer 1, you can combine one of the movies and two promos to make an offering. Or, in Offer 2, you can combine a different ad with a different promo and two movies to create a "two for one" offering.

Inventory at VOD Server

| ADVERTISEMENT A | MOVIE A | PROMO A |
| ADVERTISEMENT B | MOVIE B | PROMO B |

Offer 1 - Traditional Purchase with Advertisement and Promos

ADVERTISEMENT A → MOVIE A → PROMO A → PROMO B

Offer 2 - "Two for One" with Advertisement and Promos

PROMO A → MOVIE A → ADVERTISEMENT B → MOVIE B

This is an example of a static playlist that has been pre-determined prior to the view start date assigned to the playlist. Future versions of this feature may include the ability to create dynamic playlists based on subscriber viewing behaviors or stored demographic information.

Other uses for playlists include the formation of both category and main page barker videos. In this scenario, instead of editing a series of movie trailers into one video that then gets encoded, a playlist enables content providers and MSOs to reuse existing movie trailers to be played back, as a barker video, in either a set or

random order. Furthermore, since a playlist will be an asset having their own window dates, different barker videos can be applied at different times of the day or week.

Adding Chaptering Information – Similar to a DVD presentation, an intended feature of the new specification is to allow for each asset to be indexed and then have chapter information and chapter graphics applied to the indexed locations. Once a subscriber has navigated to and ordered a particular title, this feature will allow the viewer to now navigate within the asset. Viewers would also be able to skip past or skip to chapters as desired.

Managing Menu Categories – Currently, content is displayed in menu categories with no regard to the display order other than alphabetically by title. An intended feature of the new specification is to allow content providers and/or MSOs to define a list order of the menu category contents as well as time durations for the listing within the menu category.

Adding Keywords – In an environment where the amount of content on a VOD system exceeds the practical navigational ability of the subscriber, keyword search functions will become an attractive feature. In this scenario, a user can enter keywords, perform a keyword search, and then select from a list of results that might not have otherwise been displayed on the VOD user interface.

FUTURE TRENDS

New Requirements based on Current Capabilities

When considering the challenges of Asset Management and Distribution, content providers must consider the number of files, or units, distributed rather than the number of hours. In other words, it may take four times the effort to distribute and manage four 15 minute titles than it does to distribute and manage a single one 1 hour title. By studying the trend of VOD operations using the current CL1.1 specification over the past three years, we found that the average run time per title has been steadily decreasing which inversely increases the number of units per hour of content to be distributed and managed.

The following chart shows TVN data gathered over the last three years illustrating how the average run time per asset has been decreasing. In December of 2002, TVN managed 2100 hours of in-window assets with an average run time of 57.11 minutes resulting in approximately 2225 titles. In December of 2003, TVN managed approximately 2650 hours of in-window assets with an average run time of 49.71 minutes resulting in approximately 3200 titles. In December of 2004, TVN managed approximately 3500 hours of in-window assets with an average run time of 48.78 minutes resulting in approximately 4200 titles. This equates to a 17% decrease in average run time over the three year period.
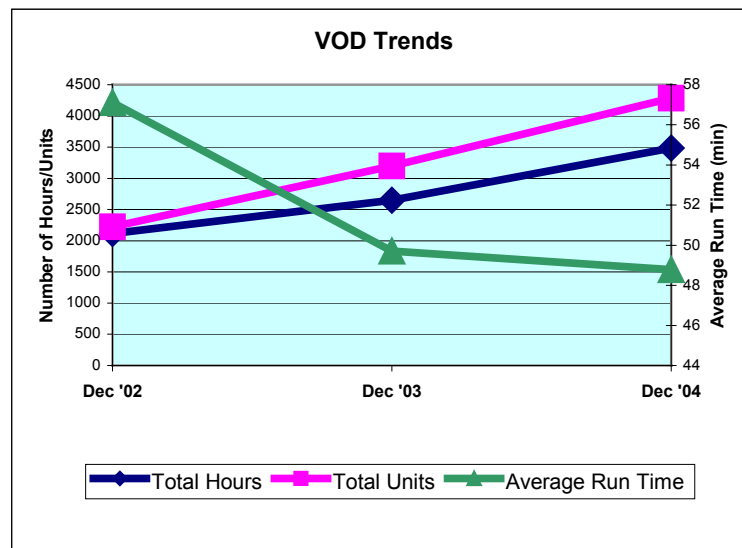
Another trend that we have noticed over the past year is a decrease in the delivery lead times. This is due to the introduction of time sensitive content such as sports highlights and current events.

If these trends continues, which we think they will, and there are no new capabilities introduced, then an unprepared Asset Management System will be challenged to distribute and manage this increased unit volume of content quickly and efficiently. Adding on top of that the new intended capabilities introduced by CL2.0, you may find an exponential increase in the number of units per hour to manage.

New Requirements Based on New Capabilities

Following is a review of some of the increased capabilities introduced by CL2.0 from an Asset Management and Distribution perspective:

Breaking up Asset Packages – Using the example of a CL1.1 asset package containing a movie file, a preview file, and a metadata file, the management of the asset package consists of the management of three individual files. Breaking up the package into multiple distributed elements of the preview one week, the art work two weeks later, and the movie asset as the final delivered asset will result in the creation, distribution, and management of six individual files. The result is a two fold increase in the number of units to distribute and manage given the same run time.

Using Playlists to Insert Ads – Under the current proposed specification for playlists, there is no technical limitation to the complexity and resulting amount of assets that can be strung together to form a playlist. However, there will no doubt be practical limitations introduced during implementation. If we look at the most basic, easiest to implement playlist, it would consist of one or two promos together with a main movie asset. In this scenario, there are no dependencies on back-end process such as those associated with ad-viewing confirmation and reconciliation. Using this example, given a slight increase in total run time, up to two additional metadata files and two MPEG files will need to be distributed and managed. The result, again, is at least two fold increase in the number of units to distribute and manage given a similar run time.

Adding Chaptering Information – Although the indexing tags for the location of each chapter will be contained within the existing metadata file, the addition of optional chapter graphics will increase the number of units to be managed in direct proportion.

MANAGING ASSETS

New Demands for Asset Management Systems

It may appear obvious that the new capabilities introduced by the new CL2.0 specification also introduces new demands for Asset Management and Distribution systems. With asset packages being broken apart, tracking the relationships of these separated assets will be a key feature of any future Asset Management and Distribution system. New systems must keep track of each package element each having their own window dates that must all overlap at some point in order to produce a viable offering to a subscriber. Furthermore, as individual elements of playlists are identified, their viewable window dates must, at minimum, match the start and end view dates as defined in the playlist.

What Content Providers can do to Prepare

Although the timeframe for implementing these new features is uncertain, it is important for content providers to prepare for them in advance. Following are a few suggestions:

- Asset Management - Approach the new capabilities from an Asset Management perspective paying close attention to the challenge of managing more units per hour and what may seem to be disparate assets that come together on a VOD server through the use of playlists.
- Segmenting Files - For the short term, and only after playlists are implemented, consider separating content into segments so that other elements can be inserted in between.

- Adding Keywords – Start creating and adding keywords to your content.
- Chapter Graphics – Start identifying and storing graphics that can be used to identify chapter locations.

CONCLUSION

The new capabilities brought on by the introduction of CL2.0 are exciting and are bound to launch the VOD product into its next generation of usefulness. However, one must not underestimate the demands the new capabilities will have on Asset Management and Distribution systems. The sooner content providers can intelligently anticipate the use of CL2.0, the better they can prepare by upgrading or selecting an Asset Management and Distribution system or service that is capable of satisfying these new demands.