

More Than Content Delivery

Factors to Consider in Executing a Digital Media Distribution Strategy

Executive Summary

The utilization of a digital content delivery network can be key to site performance and efficiency. Yet performance also hinges on many other factors. In planning and implementing a digital media initiative it is important to look at the bigger picture, and understand the entire “value chain” required to deliver high performance and an engaging experience.

The distribution of digital content has grown rapidly According to IDC Market Analysis report, U.S. Consumer Internet Traffic 2009-2013 Forecast, U.S. consumer Internet-generated IP traffic is forecast to grow from approximately 14,000TB per day in 2008 to over 36,000TB per day in 2013. It is no surprise that companies centered in the media industry are increasingly distributing content in digital form over the Internet. But increasingly, enterprises far from the media world are using digital media for organizational communication, employee training and communicating with their supply and distribution partners.

If it is to deliver full value, a digital media solution (DMS) must be carefully planned and implemented through many steps, across the entire DMS value chain. This paper explores the many issues that must be managed in the DMS value chain.



Growth and Opportunities in Digital Media

The delivery of long-form video content such as TV shows and movies, music, movie trailers, news, sports, commercials, executive communications, sales meetings, employee training, and other video content through digital media is growing rapidly as enterprises take advantage of its power to connect with customers, employees and business allies, such as suppliers and distributors. Organizations are turning digital communication over the public Internet and private networks into an affordable and effective tool for communication, product delivery and revenue generation. Internet video revenue is forecasted to grow at a compound annual growth rate (CAGR) of 56.5% from 2008-2013 from \$1.8B to \$16.8B in the respective years according to the 2009 IDC Market Analysis report, U.S. Consumer Internet Traffic 2009-2013 Forecast and Analysis: Despite the Economy, Internet Video Keeps Growing.

Major users are media, information and entertainment firms. These companies are well stocked with digital content such as movies, video and music, much of it delivered through theaters, broadcast and cable TV and radio. They are using digital distribution as an additional, relatively low-cost channel to deliver content products and generate income by increasing their reach and delivering a richer content experience.

Yet users also include enterprises focused on other markets. They include smaller firms with multiple small office locations, as well as the most sophisticated multinational companies. According to *Frost & Sullivan 2009 World Enterprise, Broadband, Mobile Video Transcoders Market* report, enterprises today are cost effectively using high-quality video communication with all employees and stakeholders, for delivering critical information, and regulations; ensuring that all globally distributed members stay on the same page. Many of them use videos for conducting training sessions and foster knowledge within various business and industry groups through advertising campaigns, marketing, branding, sales and customer support among others.

Inside the firewall, using private content distribution arrangements instead of the Internet, companies are implementing business-to-business applications such as streaming video, live and on-demand webcasting, e-learning and virtual trade shows. The CEO's annual kickoff, for instance, can be channeled to employees' desktops through a webcast. Training courses may be streamed live to employees, or cached for viewing at the employee's convenience. In-house news broadcasts and market reports are being viewed on desktop PCs, instead of (or in addition to) closed circuit television in the cafeteria.

Keeping digital content delivery inside the firewall doesn't limit it to the corporate campus. Secure distribution networks make it possible to share digital content with suppliers, distributors and branch locations, ensuring everyone in the value chain is working on the same digital page.

Multiple factors are driving the growth of digital media:

- The expansion of wired and wireless broadband connectivity means many more end users in more places can access and enjoy high quality, rich digital content.
- A growing range of end user devices is creating new delivery opportunities. Audiences for digital content today extend far beyond the television and desktop computer screen. Highly portable "netbook" computers and increasingly powerful smart phones like the iPhone and personal digital assistant (PDA) devices such as the BlackBerry® can deliver digital content almost anywhere. Digital signs enable merchants and advertisers to change promotions frequently and even deliver video sign content.

- Consumers are increasingly comfortable getting their entertainment, doing research, downloading content and shopping online. When they buy digital content, such as video, audio and software products, taking delivery of those products through the Internet is easy, quick and inexpensive.
- YouTube™ has spawned a generation who is comfortable communicating with video whether it's in a social environment and, increasingly, the work place.
- Organizations are seeking to increase the value of their content and increase the amount of content they distribute, while lowering the total cost of management, publishing and delivery. They want to grow revenue faster while holding costs down, and digital content delivery is one way to do it.
- The current economic environment has increased corporate necessity to control costs while at the same time increasing the need for greater organizational transparency. Video communication can address both these needs.

These factors along with revenue forecasts are producing an upsurge in digital content delivery.

Challenges of Digital Content Management and Delivery

While digital media is a powerful tool for communication and content delivery, the technology also poses significant challenges. Issues of performance and security, system complexity, scale and cost all must be understood and managed before the solution can achieve its potential.

Performance, particularly as seen in the eyes of the customer or end user, is critical. After all, digital media becomes an extension of the organization's brand. Performance is measured in several ways.

Speed and Quality

Simply having a web presence is not enough in today's competitive cyber-driven markets. Online retailers, informational sites and distance learning providers – indeed, any organization with a web presence – must deliver a positive experience for web viewers, because a poor end-user experience on the web translates into a poor customer perception of the brand and, consequently, decreased sales. Website acceleration enables faster loads and refreshes of web pages and web page objects for better perceived performance and improved satisfaction.

The bandwidth available between content server and the end user affects both speed and quality. File downloads may be slowed by a lack of bandwidth or network congestion. The quality of streaming video and audio can be severely degraded by network delay and "jitter" caused when multiple applications contend for insufficient network resources. Network Quality of Service (QoS) controls that give first priority to these bandwidth-sensitive applications may be required.

Reliability

If the digital media solution is effective and important to the organization, its employees and its customers, it follows that it must be reliable and available when needed. Content storage, control and transmission systems must be dependable and, if necessary, redundant.

Flexibility

The company is announcing a major acquisition. If the chief executive decides to schedule an international employee webcast in 24 hours, will the content delivery network be ready? The content delivery system must not only handle organic growth; it may also have to accommodate such sudden peak loads, and rapid expansion to

new geographies and audiences. It must be flexible enough to accommodate multiple content formats such as audio, Power Point slides, video from multiple locations and source formats.

Security

A content delivery system exposed to tampering, theft of content or unauthorized access is simply not acceptable.

Compatibility

The digital media solution must have the ability through proper software and hardware to encode and transcode analog and digital content into various digital output formats such as digital displays, mobile devices, and computers.

A related challenge that can significantly influence system performance is the inherent complexity of a digital content delivery system. Multiple – perhaps hundreds or thousands – of content elements must be created, then conditioned, organized, published, stored and delivered, often to multiple customer sets, each with differing requirements.

For instance, consumers may be dispersed across the nation or the world. Their individual network connections may differ and their electronic proximity to the content will vary greatly. Some will be connecting over wireless networks. They may have ample bandwidth, but will likely need network QoS controls to ensure a quality user experience.

A different challenge may occur in the corporate setting. Corporate intranet users in a headquarters building may be limited by the bandwidth connecting their local area network (LAN) to the content server. If everybody goes online at once to view a presentation, the “thin straw” into the building may be overwhelmed and the performance of the network in its entirety will be affected.

Bringing remote offices and partner organizations, such as suppliers and sales channels, onto the network adds new complexities. The content delivery system must accommodate the differing equipment, standards and specifications these extranet users may well be using.

Facing this complex environment, the enterprise manager must decide which of these challenges to take on directly, using in-house resources, which to assign to outside specialists, and how to manage the whole process. What is the best way to achieve the reach and scale required to accomplish the organization’s goals, yet maintain its core business focus, control costs and limit staff growth?

One option is to tackle the entire A-to-Z process in house. This option is practical only for companies with an in-house media department. A more likely path is to use a combination of in-house resources and outside vendors. These outsiders could be several independent vendors that the project manager must direct, or a single vendor capable of taking responsibility for the entire spectrum of work.

Understanding the Digital Content Value Chain

The design and operation of the digital content delivery network is a vital factor in performance and efficiency. Yet the delivery network is only one component of the complex system required to create, condition, control and transmit digital content. To achieve high performance end to end, communication leaders must plan the entire “ecosystem,” and ensure quality in every stage.

The initial step in planning is to determine the scope of the project. The size and location of the audience is an important consideration. Among the questions to answer:

- Is your audience an external consumer audience or is it an internal corporate audience?
- How many simultaneous users will be engaged?
- Are audience members outside or within the corporate firewall – or both?
- Will the public Internet be acceptable as a distribution channel?
- If the Internet is used, what level of security is required?
- What content formats will need to be accommodated by the distribution network?
- How many geographic locations will distribute the content?

When reaching an internal audience, where a company might be distributing content to ten offices, the enterprises typically has ample bandwidth available inside their LAN, but limited bandwidth going into the building. They might have a ten or 100 Mbps switched environment inside the building, but getting into the building have a much smaller connection. Under normal circumstances, that broadband connection would be ample. If 1000 people in an office attempt to view an online video presentation at the same time, however, they could quickly overwhelm the connection and cause video quality to degrade.

External audiences, such as consumers and commercial customers, can access your content from anywhere in the world at anytime and possibly all at once pose a different set of problems. They can overwhelm your Web infrastructure capabilities, and degrade the experience for all of your site visitors, plus the quality of the experience will be poor for those who are electronically remote.

Content Analysis and Preparation

It is also important to consider the nature and volume of the digital content the network will carry. Decisions made about content will determine how much content preparation is required and influence the shape of the distribution network. Ask:

- What kind of content is involved? Media content could include videos, music, games, TV shows, sporting events, corporate training events, and advertising from your enterprise network. It could be on-demand or live video, audio or software downloads (paid or free), streaming video, webcasts for communication or training, software patches...the range of possibilities is broad.
- How large is the average file and what is the range of file sizes? Special distribution arrangements can decrease downloading times for large, user-downloadable objects such as music files, software, software patches and movies.
- What additional interactivity will be needed? Among the options are synchronizing audio or video with graphics, Power Point slides and indexing video content in real time with a list of searchable words used in the video. Engagement with the audience is also important: registering audience members, connecting with them through quizzes or polls and reporting on audience behavior – determining who watched or abandoned the program, and when.
- What other changes to content must be made to provide give the enterprise the control and information it needs, while providing audiences with the best possible experience?

The answers to these questions will set the stage for the many tasks involved in content preparation. Many process steps must be considered and within them, many variables are possible. Among these elements are:

Create Content

Whether it is a live event or post-produced show. Sports, training, corporate communication, or other type. Always try and produce in the highest quality format possible.

Acquire Content

Ingest media into a system or platform. Acquisition via Satellite or Fiber for live events. Digitizing from tape or ingest from a digital format for on-demand content.

Enhance the Content

Add descriptive metadata to the asset for collateral info, ad tagging, geo-restrictions, access rights, categories, etc. In addition apply advanced video indexing to enhance search capabilities on the actual transcripts of the content; Extract thumbnails for use in players.

Transform and Deliver the Content

Automate system-to-system interfaces to perform transcoding, encryption for digital rights management (DRM), digital watermarking and delivery, based on the metadata. Transcode to multiple formats for delivery to all digital devices (PC, Mobile, TV). Monitor job status from a centralized dashboard. Ingest the finished assets to the proper distribution networks such as Content Delivery Networks (CDN) or servers specific to your needs.

Monetize Content

Monetization of the content is not needed for every business model. However it should be setup within or right before the publishing stage. Items to consider are:

- Monetize through subscriptions, pay-per-minute, or pay-per-view models
- Create product enhancements – bundle with related products, adjust price structure (subscription, one time)
- Advertise – define rules for matching viewer to ad and timing of ad insertion
- Arrange for transaction e-commerce processing

Publish Content

Create links, playlists or custom feeds (RSS, mRSS, etc). Utilizing the enhanced metadata that travels with the assets, players for any digital device such as players in browsers or custom applications on an iPhone can be published to. In addition moderation and review systems can be put in place at this stage to insure proper content goes live if automation is not allowed due to contractual restrictions. All business rules (geo-restriction, access rights, release window, etc) can be added or edited at this stage, or can be triggered automatically based on the asset metadata.

Player or custom list builder tools usually are accessed in this stage. Defining your player will determine how you use the asset and metadata. Items to have in mind are:

- Configure a branded media player for use by customers, employees or partners
- Deliver an interactive experience to your users through PowerPoint slide synchronization, polls, quizzes and more

- Define distributors authorized to present the player (syndication rules)
- Define the advertising model. Pre-roll, post-roll, mid-roll, synchronized banners, ad overlays, other ad related areas in the player

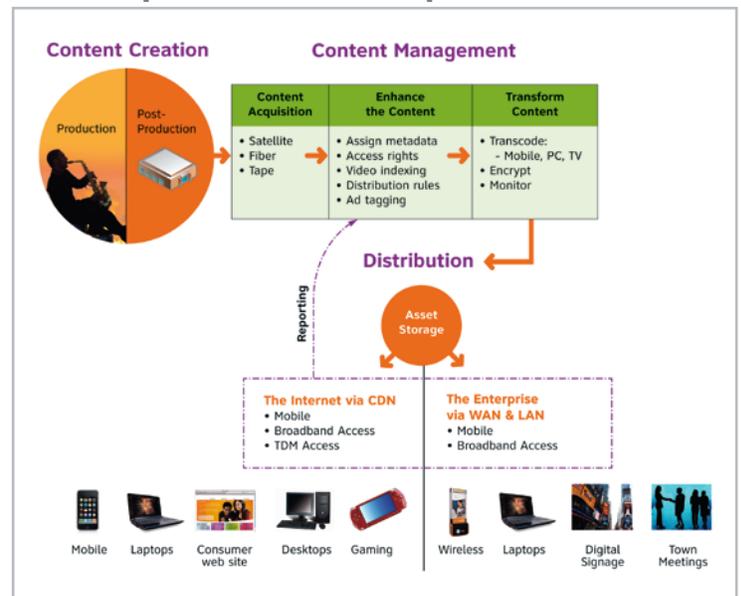
Distribute

Replicate content over several mirrored web servers strategically placed to locate content closer to end-users. Intelligently deliver your content from the closest location or most optimized path for better performance, the ability to scale to meet the demands of large or flash crowds and improved end-user experience. Determine what methods work best for your digital devices and locations.

Report

Site and visitor analytics to assist with ROI calculations and importantly so that content can be optimized for improved success in your business model. Determine where users are abandoning the views, what bandwidth speed users were connecting at, what video formats were preferred. All important variables in improving efficiency and determining if your monetization models are working or how successful your content is in capturing the end user.

Digital Media Solutions Value Chain Identifying Key Tasks Required in Content Preparation



The basic task of creating digital content is the responsibility of the enterprise and its suppliers. That starts the process, but much more is required to store, manage, retrieve, publish, index, and monetize digital media assets. For instance, you may want to condition digital assets so they can be distributed to multiple channels and audiences by transcoding the content for distribution to any format and any device. One option could be a branded media player that you can provide for customers, employees or partners. You may want to apply business rules to control who can use or access the content.

To make content easily available through search functionality (and maximize return on media assets), you can prepare media for video indexing, speech/audio and video search, and content personalization. These functions include video indexing based on scene changes and facial detection, audio/speech processing to normalize close caption or speech-to-text data and match transcripts to scenes, and establishing a search capability for spoken communications, content, or metadata.

To turn a profit from your content distribution, you may want to establish subscription or pay-per-view arrangements, and make it possible to insert advertising in, on or around the content. To increase the interactivity of your users' experience, you can set up PowerPoint slide synchronization, polls, quizzes and more.

Given the right approach, the complexity of these processes can be readily managed. Many business processes can be automated so that digital media assets flow smoothly from the content creators to customers, employees and partners. For instance, workflows for notifications, content reviews and approvals can be automated. It is also possible to automate system-to-system interfaces to perform transcoding, encryption, digital watermarking and delivery. Advanced systems enable project managers to monitor job status from a centralized dashboard.

Content management services can simplify the work required to manage and deliver your rich media and move content to your website faster. Media management lets you acquire and ingest rich media content such as videos, music, games, TV shows, sporting events, corporate training events, and advertising from your enterprise network. Store and manage, retrieve, publish, index, and monetize your rich media assets on an automated platform.

Content Storage and Delivery

After analyzing the combination of business objectives, content and audiences you have at hand, you will be faced with the decision of how to distribute and store your content efficiently and effectively you will need to consider a number of variables:

- Have the content installed on enterprise-owned servers
- Store the content on dedicated servers that are remotely located, managed by an outside vendor and permanently connected to the enterprise network via a network product such as a virtual private network (VPN)
- Host content on shared servers entirely managed by the outside vendor in a complete turnkey solution
- Transmit content directly from a central server, or through mirrored web servers located closer to end users. The distributed server approach, while more complex, reduces traffic on the backbone network. Placing content closer to end-users and using network intelligence to deliver that content from the closest location or most optimized path can provide better performance and an improved end-user experience

The Content Provider Solution

Companies have an important choice to make. They can manage digital content through a "do it yourself" approach, use a partially-outsourced approach or simply turn the work over to an outside supplier. This third

option has significant benefits in helping simplify the complex task of media processing and distribution. By outsourcing to a single provider, companies can:

- Ensure end-to-end management of content and delivery, with reporting tools that cover the entire flow of content development and delivery
- Clarify responsibilities through an integrated, one-stop solution, a principle sometimes known as "one throat to choke"
- Simplify and focus. By selecting one vendor, the content owner avoids the need to evaluate and maintain relationships with the multiple vendors who may be engaged in a significant content distribution effort. Time that managers would otherwise spend on content distribution issues they can focus on their core business
- Ensure that their solution can deliver the scale and reach that their business requires. With the right distribution provider the enterprise can enable growth anywhere in the world, without making a major direct investment in infrastructure, staff or training
- Gain access to the latest technologies
- Ensure the performance they and their end users expect, including high transmission speed, system reliability and protection against security threats

A single-provider solution may not be the only way to achieve this level of performance, but it is arguably the simplest. The company must be clear about its objectives and the nature of its core business. If content distribution is the center of the business, then a home-grown solution may work just fine. If the business focus is elsewhere, then a content distribution specialist may well provide the best and most affordable answer.

Conclusion

Digital content delivery is a rapidly expanding opportunity, both for media specialist companies and for other organizations that distribute content not as a basic enterprise function, but to support and enhance their core business.

In either case, the end user's digital content experience will strongly influence the content provider's image, reputation and future profitability. As much as the quality of any physical product or personal service, content delivery becomes the face of your organization.

Creating the digital media value chain – the preparation and delivery of digital content – is an unavoidably lengthy, complex and painstaking process. While this complexity may not concern providers who live and breathe digital media, it may well be more than non-specialist organizations want to tackle on their own. For such firms, the best option is to assign the task to a provider with the technical skill, experience and network resources to quickly and efficiently handle the entire job.

For more information contact an AT&T Representative or visit www.att.com/business.