



# Enterprise streaming SOLUTIONS

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# Eyes on the Enterprise

***It's no longer a question of whether or not you can afford to add streaming media to your corporate communications toolbox, but whether you can afford not to?***

In today's market, it's clear that the use of streaming media technology, applications, and appliances has dramatically changed. Informed and empowered customers who are seriously looking at the opportunities that streaming media offers within their enterprise organization now drive the industry. For enterprises, the question is no longer can you afford to use streaming media technology, but rather, can you afford not to?

"Today, companies are realizing they can either make money or save money by using streaming media technology," says Tim Napoleon, director of business development for VitalStream, the streaming media service provider that leads off this StreamingMedia.com Enterprise White Paper. We're as convinced as he is that streaming media is a win-win for enterprise applications, offering return on investment both tangible, in the form of profits and cost- or time-savings, and intangible, in the form of more effective information-sharing that boosts both employee and client confidence.

Though most of what you read in the

press focuses on the consumer end of streaming media applications—news providers delivering breaking stories with streaming video, radio stations expanding their reach via Internet audio—the fact remains that streaming media is making a bigger impact within enterprise organizations than in any other vertical market. It may not be the sexiest use of the technology when compared to the gaming, music, and movie industries, but there's no denying the tremendous capabilities it gives corporations to communicate more efficiently and effectively.

To be truly effective, streaming media systems must work in concert with other collaborative technologies. Enterprise organizations proactively address this integration with a sharp eye on the business value, whether corporate or media-focused, that streaming media offers. This convergence demands seamless integration to move enterprise-class systems and solutions to the next level. It's time for the industry to recognize this—and that is what *Enterprise Streaming Solutions* is all about. Many of the vendors

that you'll read about on the following pages have dedicated solutions that solve specific problems corporations face on a daily basis.

## Streaming Media Comes of Age

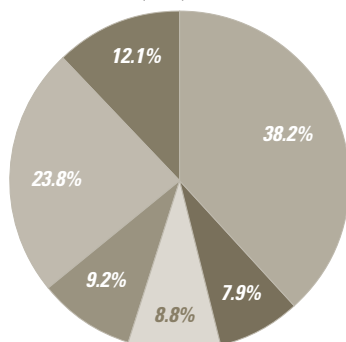
Today, we have strong indicators of the use and growth of streaming media-based applications within the enterprise. In a recent survey conducted by StreamingMedia.com and the Aberdeen Group, 74.1% of business and personal users access streaming media at least two to three times per week. [See Figure 1].

And while streaming media is used for many purposes, our survey concluded that Web conferencing and webcasting lead in business applications with 40.3% and 46.2% current usage, respectively. Look for those numbers to grow to 64.7% and 72.1%, respectively, by the end of 2004. [See Figure 2].

These numbers reflect a clear trend, demonstrating how enterprise corporations are utilizing these technologies to inform, educate, and instruct both inside and outside

How often do you use streaming or digital media for personal or business use?

- More than once a day (38.2%)
- Once a day (12.1%)
- 2 to 3 times a week (23.8%)
- Once a week (9.2%)
- 2 to 3 times a month (8.8%)
- Once a month (7.9%)



## Business Applications of Streaming Media

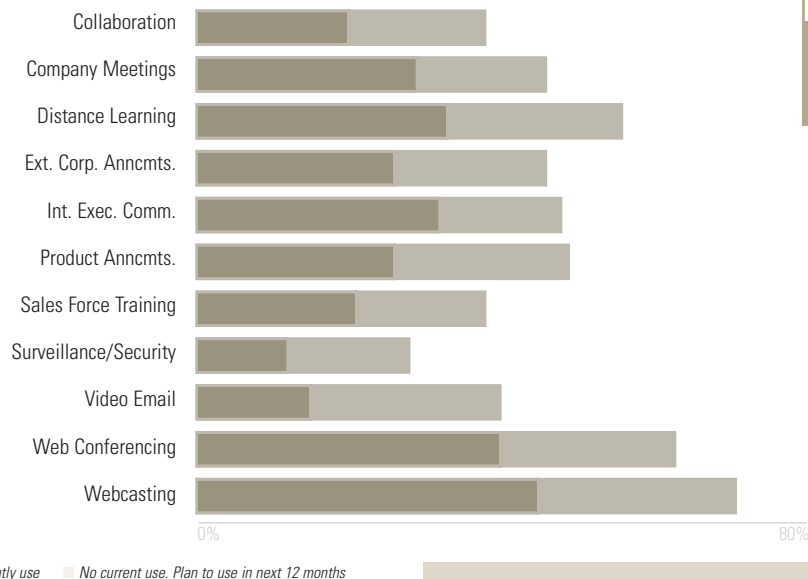


Figure 1

Figure 2

their organizations. But don't let these numbers fool you. Today, enterprises are using streaming media across all divisions. Even though webcasting and Web conferencing are growing the fastest, corporations are not by any stretch of the imagination using streaming technology exclusively for one-off communication events. Enterprise corporations are implementing streaming media along with their other core technologies, treating it as a real business communication tool in every vertical imaginable.

"Corporations who used to contact us to do just one-off events are now calling looking for ways to incorporate streaming media into every part of the business," says VitalStream's Napoleon. And VitalStream, like any good service provider, responds to those corporations by tailoring their solutions—which range from video-on-demand to managed streaming servers to content encoding—to each customer's specific needs. And lest you think that only large enterprises can benefit from streaming media, VitalStream's experience shows that streaming's ROI potential is as strong for organizations with 1,000 employees as it is for corporations with 100,000 on staff.

### In the Business of Helping Your Business

The service providers and solution vendors in the StreamingMedia.com Enterprise white paper understand that streaming media is not your core business, but rather a complement to it, a tool to make it more effective and profitable. They've made it easy, affordable, and efficient to plan, test, and implement a streaming media strategy within your organization so you can spend

Streaming media is a win-win for enterprise applications, offering return on investment both tangible, in the form of profits and cost- or time-savings, and intangible, in the form of more effective information-sharing that boosts both employee and client confidence.

your time focusing on your core business, not the technology. Streaming media should no longer be viewed as a new, cutting-edge technology but rather another business communications tool that enables you to do more with less.

Because streaming is now an established technology that's a decade old, you no longer have to spend years and six figures to implement a streaming media-based solution that provides you with an immediate ROI. No matter what vertical industry you are in—financial, pharmaceutical, agricultural, and the list goes on—there are dozens of success stories within your field that showcase how companies have benefited from the use of streaming and digital media technologies and applications every day. VitalStream's submission demonstrates the value of streaming media for advertising, branding, product launches, and training. But that's not the whole story, of course. You'll read how streaming solutions have helped enterprises improve communication with international employees, deliver safety and technical information to customers, and

use rich media to get their message out in cost-effective, high-impact ways, to name just a few of the applications addressed in this white paper.

For companies who are new to streaming media and looking to implement systems quickly, cheaply and effectively, this Enterprise white paper will provide an understanding of some of the solutions available on the market, and their potential value to your organization. If you think that implementing these systems is extremely complicated or time-consuming, set those fears aside. The vendors on the following pages have years of experience working with enterprises like yours, and they strive to make streaming media adoption as painless as possible. Test the waters and apply a streaming media-based solution within one division of your company or for one business communication problem. You'll soon see the benefits it provides. Streaming media is no longer some far-fetched dream, but rather a real, down-to-earth business communications tool, just like email and your fax machine.

With quick and affordable solutions on the market, reliable ways to measure your achievable ROI, and many examples of what has and has not worked over the past few years in the enterprise environment, there is no better time than now to show your boss, your organization, or your employees how to leverage this technology.

Streaming Media, Inc. and StreamingMedia.com are your indispensable sources for quality information, data, and analysis, giving you the tools you need to help you make your most important streaming business assessments. We hope this Enterprise white paper educates and informs you about what's available today, and we look forward to helping you gain the knowledge you need to help you move your business forward.

If we can be of any assistance with your efforts, please don't hesitate to contact us.

**Dan Rayburn** has nearly ten years of experience founding and growing successful streaming and digital media companies. As executive vice president for Streaming Media Inc.—a diversified media company with a mission to serve and educate the streaming media industry—Rayburn is responsible for the growth and direction of the online and research divisions and is the conference chairman for the Streaming Media East and West tradeshows. Rayburn also publishes the "Stream This!" newsletter delivered to over 10,000 monthly subscribers. As a passionate leader and spokesperson in the field of streaming and digital media, Rayburn is noted for his expertise and insight pertaining to digital media business models, strategy, industry foresight, hardware and software products, delivery methods, and cutting-edge technology solutions in the U.S. and abroad. He can be reached at dan@streamingmedia.com.

StreamingMedia.com is the premier online destination for professionals seeking industry news, information, articles, directories, and services. The site features thousands of original articles, hundreds of hours of audio/video content, breaking news, research reports, industry directory, and case studies that showcase the latest real-world streaming media implementations. The StreamingMedia Xtra newsletter delivers breaking news to more than 40,000 subscribers each week.

Direct editorial submissions, comments, and questions to StreamingMedia.com Editor Eric Schumacher-Rasmussen at erics@streamingmedia.com.



Dan Rayburn

# Streaming Media's Success Story

**Larry Bouthillier**  
Director of Educational Technology  
and Multimedia Development  
Harvard University

**Tim Napoleon**  
Director of Business Development  
VitalStream, Inc.

***With technical obstacles gone and costs dropping, rich media makes more sense than ever for the enterprise market.***

In all manner of industries, the successful implementation of rich media technologies is making an impact on the bottom line. Rich media employs technologies such as streaming audio, streaming video, animation, and other sensory and interactive features to deliver a specific message. In this article, we will describe the market trends driving the broadening success of rich media; we'll detail some ways companies are profiting from the technology; and we'll explain the unique value proposition of VitalStream's industry-leading experience and content delivery infrastructure.

Before we get into the specifics of how streaming media can help your business, let's discuss a few recent market trends that have converged to improve the quality, reach, and effectiveness of rich media.

## Market Trends

For years we've heard Internet analysts predict that the rapid adoption of interactive rich media over the Internet is coming. Today, the waiting is over; most of the previous obstacles have been removed. High-speed connectivity and computer processing power have grown substantially over the last few years. Universal standards for audio and video delivery have emerged to gain widespread adoption in the marketplace. All of these factors have combined to drive down the costs and complexity of delivering rich media. The result is excitement and



demand from customers, and targeted, relevant rich media content is creating an opportunity for companies who rise to the challenge of meeting their needs.

### **Broadband Penetration Enables Widespread Rich Media Content Distribution**

Broadband is providing a viable channel for the distribution of rich media content. How important is broadband growth? According to Nielsen/NetRatings, 39 million of 109 million (36%) online U.S. households have broadband, an increase of 49% over last year. Corporate broadband penetration is more than double the household rate, with 79% of at-work Internet users enjoying broadband connections.

### **Watching Online Video Is Easier Than Ever Before**

Recently, the user experience of watching video online has improved dramatically. Issues such as incompatible formats and versions, browser compatibility problems, and video players that push advertising or modify a computer's media settings are becoming less of an issue as technology providers continue to compete for market leadership.

One example of a technology that's improving the end user experience is Macromedia® Flash™ MX 2004. First, the Flash player is broadly distributed. According to Macromedia, 98% of Internet-enabled computers already have the Flash plug-in. Flash works on the platforms your customers use—Windows (from XP all the way back to NT4 and Win98), Macintosh (9.x and OS X) and Linux—as well as on most popular browsers, including Internet Explorer, Netscape, Mozilla, AOL, Safari, and Opera. For content providers, it means low-cost production and delivery: You need only one skill set and one infrastructure to support everyone in your audience. For users, it means simple, seamless video playback. It simply works.

Streaming media is an effective tool for  
advertising campaigns, marketing and branding,  
sales training, and customer support

### Declining Costs Create New Opportunities

Standards for encoding and delivering video online such as Macromedia® Flash™ and Microsoft® Windows Media are spurring innovation that's increasing the efficiency and sophistication of video production tools. Mature and solid platforms are reducing the costs to supporting end-users.

### Streaming Media Opportunities for Business

Streaming media is an effective tool for many uses in business, including advertising campaigns, marketing and branding, sales, training, and customer support. Below you'll find some examples of uses VitalStream helped enable for its customers. The examples listed provide a small sampling of the success that can be achieved by effectively using rich streaming media in your overall business strategy. You will likely have your own ideas based on the unique needs of your business.

### Advertising Campaigns/Marketing and Branding Effectiveness

Rich media advertising has become a market-leading approach to acquiring new customers online, and one that pays measurable dividends. If you're advertising online, you can't afford to ignore rich media's benefits.

With branding and new customer acquisition as key objectives, VitalStream worked with a leading advertising agency

to launch a year-long branding campaign for a large global consumer product company. The launch was delivered using the Flash Video Streaming Service powered by VitalStream. As part of the campaign, interactive Flash video ads were featured on the homepages of Yahoo, MSN, and other high-traffic internet portals. VitalStream's experience with large scale streaming projects, internal software infrastructure, and content delivery networks helped to make the launch a success.

Results speak for themselves, and the data shows that rich media advertising works. DoubleClick—the leading provider of solutions for advertising agencies, marketers, and Web publishers to plan, execute, and analyze their online marketing programs—reported that in Q1 2004, click-through rates for rich media web site ads are four times those of traditional static-image (.gif, .jpg) ads. The data also shows that rich media delivers. Conversion rates for rich media ads are 2.30%, fully half-again the 1.47% conversion rate for static ads.

### Product Demos and Training Effectiveness

Q1 2004 DoubleClick SiteAdvance Web analytics data shows that consumers are becoming more sophisticated in their online shopping behavior. They are spending more time on web sites, looking at more pages, using search functions more frequently, and are more likely to

use their shopping cart as a comparison shopping tool.

Streaming media enhances the online experience for your customers by appealing to multiple senses, improving the ability for customers to understand and retain your message. Adding interactivity to online product and sales demonstrations keeps the customer interested, which translates into converted sales and closed business.

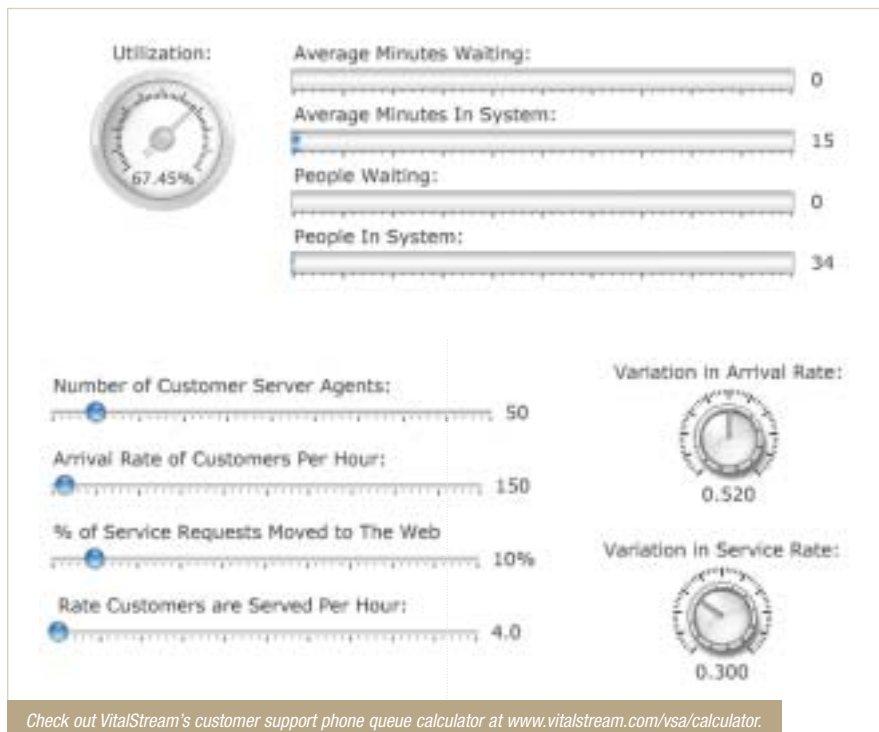
A leading CRM company approached VitalStream to deliver a Flash video streaming-based "demo center" to be placed on their corporate web site. The interactive demo center features an interface where customers can select a demonstration based on their intended uses of the product. Video of company experts is streamed and synchronized with interactive slides reinforcing message points made by the speaker.

One of the largest online auction sites worked with VitalStream to create an online university educating its customers on how to buy and sell goods using its service. The multimedia curriculum features interactive slides and high quality video of their "Dean of Education" teaching five separate course modules. The educational content is sold on a pay-per-view subscription basis using a payment processing solution capable of handling thousands of transactions per second and taking international orders. Streaming the content helps increase the reach by providing the course via the Internet. Students receive the same content as they would at the in-person seminars, and even get a diploma when they have successfully completed the coursework and tests.

### Customer Service and Support

A fastest-growing segment of the streaming media market is customer service and support. Today's customers demand instant fulfillment of their support needs. Rather than waiting in a queue on hold to get a support question answered, many customers would prefer watching a short, explanatory video clip online. This benefits not just the online support customer, but saves you money and improves customer service for your phone customers as well. If you handle just 10% of your customers' support calls on your web site, you can greatly reduce your call-center wait times.

For example, if your call center employs 20 busy customer service representatives, and they handle 400 five-minute calls an hour, then each customer is spending an agonizing 11 minutes on hold before they



## VitalStream Case Studies



### Sales and Marketing Effectiveness

#### Sundance Online Film Festival

Sundance Online Film Festival is utilizing the Flash Video Streaming Service powered by VitalStream to deliver dynamic, streaming video content to promote the festival and highlight the films. Flash video provides Sundance Online Film Festival with the ability to deeply integrate video directly in its site to create a seamless experience. And because of the ubiquity of Flash video, Sundance can be confident that worldwide visitors will be able to see the video.

<http://festival.sundance.org/>

### Promotion and Branding Effectiveness

#### Buena Vista

Buena Vista Internet Marketing Division uses VitalStream to deliver its latest movie trailers online using major streaming media formats including Microsoft Windows Media, Apple QuickTime, Real, and Macromedia Flash. The Division leverages the power of the Internet and streaming media to generate online publicity with the ultimate goal of increasing box office ticket sales. Viral marketing is achieved by advertising upcoming feature films on movie pages with similar market demographics.

[www.disney.com](http://www.disney.com), [www.touchstonepictures.com](http://www.touchstonepictures.com)



### Product and Sales Demonstration

#### Salesforce.com

Salesforce.com, a global leader in customer relationship management (CRM) software, uses the Flash Video Streaming Service powered by VitalStream to deliver their CRM Demo Center featuring rich media footage of their experts giving product demonstrations and presentations. The demonstration uses custom video controls with chapters to enable the audience to jump to different areas of the demonstration. Flash graphics, slides and buttons are seamlessly interwoven with Flash video to create an interactive experience for prospective customers.

[www.salesforce.com](http://www.salesforce.com)



talk to a real live person. You've got 70 people at a time waiting in line, wishing at that moment they were doing anything but business with you.

Now, move just 10% of those support calls to your web site, and you drop wait times to under a minute. You've improved the customer phone support experience, given your most sophisticated customers top-notch help online, and still saved money. At this point, even if you reduce the call-center staff by one, you'll still keep phone wait times under a minute. Try it for yourself at [www.vitalstream.com/vsa/calculator](http://www.vitalstream.com/vsa/calculator).

Companies are successfully putting large amounts of support-type content online—product support for existing customers, instructional and training videos, pre-sales product demos, and even product training for their own sales reps.

### VitalStream's Value-add

Video is an important way to communicate with your customers. Market data shows why and how companies can use rich media to reach new customers, support existing ones, and reduce costs. When you've decided to incorporate rich media to enhance your competitiveness and tackle new markets, here's where VitalStream can assist.

VitalStream is a global provider of integrated content delivery services. VitalStream makes it possible for businesses to broadcast their digital media and communications to worldwide audiences via the Internet. It provides customers with complete solutions, including audio and video streaming, live event broadcasting, Web conferencing, media asset management, integrated web hosting and consulting services, all of which seamlessly integrate with today's leading streaming media technologies. VitalStream was also the first content delivery network (CDN) to provide large-scale Flash video streaming services.

### CDN Technology

VitalStream is a leader in global streaming. Its award-winning content delivery network is certified for quality delivery in the United States, Europe, and Asia.

CDNs are designed to meet three major goals: reliability, scalability, and fast performance. VitalStream's carrier-neutral network infrastructure provides exceptional reliability. To meet this challenge, VitalStream's network employs multiple redundancies at every level. VitalStream's network operations centers are provisioned for continuous electrical power, comprehensive disaster prevention and recovery,

and a secure environment. Each center is connected to multiple tier-1 Internet backbone carriers providing additional redundancy and high-quality streaming around the globe. Keynote Systems, using its Streaming Perspective® measurement service, awarded VitalStream's content delivery network a StreamQ rating of A+.

VitalStream's reliable network infrastructure also provides unparalleled scalability and performance. In the first quarter of 2004, the VitalStream delivery network served over 1.75 million streams in one twenty-four-hour period to Internet viewers. VitalStream employs RouteScience® adaptive network software to intelligently and proactively monitor and route network traffic. This real-time analysis dynamically assesses and adjusts the network delivery infrastructure and optimizes network traffic paths.

### Infrastructure & Integration Expertise

VitalStream is keenly focused on the technology and the business of rich media streaming. While other CDNs support video as just another data type, VitalStream knows that there's more to economically successful deployment of rich media than delivering bits out to the network. VitalStream is dedicated to the overall success of your rich media strategy. It challenges its customers to think a few steps ahead. Will your plans build Web site traffic? Will customers be able to find your content? Will it offer a great user experience to the target audience? VitalStream offers pragmatic, real-world advice about fine-tuning your rich media strategy, informed by its years of collective experi-

more info



More information about VitalStream and examples of the benefits of using rich media streaming in your corporate enterprise can be found by going to VitalStream's Web site or calling:

[www.vitalstream.com](http://www.vitalstream.com)  
800.254.7554

ence with helping customers meet their digital media goals.

To achieve your company's business agenda, VitalStream offers help with every aspect of delivering rich media—video production, encoding, and content management. VitalStream works with leaders in the industry, bringing best-of-breed solutions to solve media delivery challenges.

### Final Points

Rich media is making an impact on the bottom-line in numerous industries. Market trends show an increase in the adoption of broadband and that video technology can be a seamless experience for viewers. Companies can take advantage of the declining cost and complexity of delivering rich media to reach new and existing customers and possibly save money and improve customer service. VitalStream is an industry leader helping companies with all aspects of using rich media to achieve business goals.

*The views expressed in this article are those of the authors and are provided for informational purposes only.*

### Larry Bouthillier

Larry Bouthillier is director of educational technology and multimedia development for Harvard University in Boston, MA. His background is in media production, originally as an audio engineer for large concerts and shows. Bouthillier joined Harvard University's media production team as an audio engineer, where he developed multimedia and programming skills and completed Harvard Extension School's software engineering program.

### Tim Napoleon

Tim Napoleon is director of business development for VitalStream, Inc., a leading global provider of rich media streaming and content delivery network (CDN) services headquartered in Irvine, CA. With Napoleon's experience developing interactive digital media strategies, VitalStream has continued to enhance its roster of technology partnerships and alliances as well as add customers seeking to utilize streaming media technology.

# Media in the Real World

## Case Study: Air Products and Chemicals, Inc. adopts thePlatform media publishing system™

Over the past five years, music and video pirates and pundits have moved in and out of the headlines like a child that has just discovered the wonders of a revolving door. During those same years, corporate America did exactly what it is supposed to do—looked at new technologies with a healthy mix of interest and skepticism, watching patiently as technologies and standards matured, costs fell, and “gee whiz” ideas became real contributors to efficiency and profitability.

### There is No “Typical Enterprise”

Today, digital media makes sense in the enterprise—just ask Steve Cameron, Manager of Corporate Communication Technologies and Services for Air Products.

“Let’s face it, we’re not a leading-edge technology company,” Cameron jokes “but we must be doing something right.”

Air Products clearly is doing something right—they have 18,500 employees and annual revenues of over six billion dollars with healthy margins. The company serves a wide variety of customers in electronics, energy, healthcare, and manufacturing with atmospheric and specialty gases, high performance materials, chemical intermediaries, and usage and safety training for it all.

While at first glance this might not sound like digital media heaven, Air Products has a broad and complex set of communications needs. In the past, digital media technologies have helped Air Products solve

many problems, but they’ve also created new challenges.

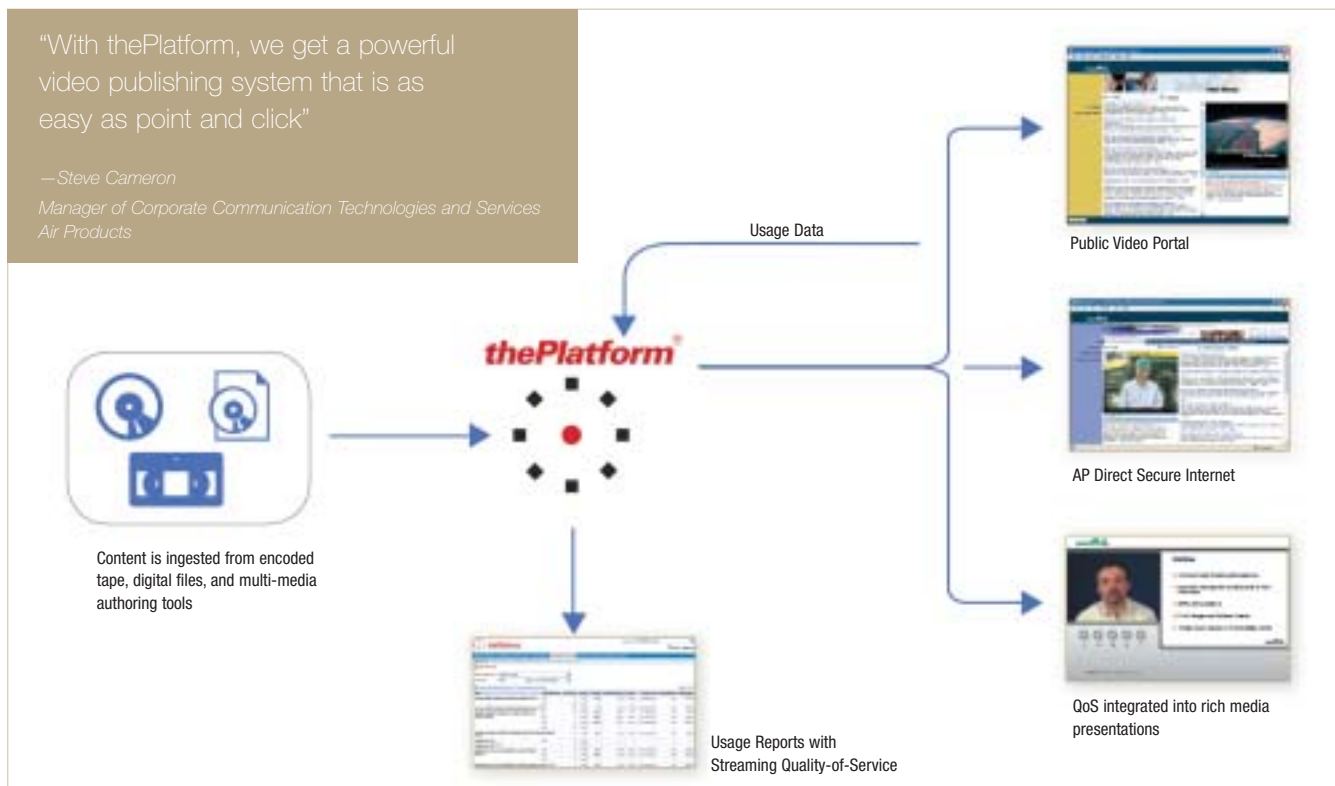
“Communications at Air Products isn’t as clear cut a proposition as cutting a CD and hoping it sells,” according to Ken Herr, Principal Media Technologist. “We have live video webcasts, on-demand presentations that combine video and synchronized slides, and everything in between—all going out to employees in 30 countries over a complex network infrastructure.”

Media can flow to any of a dizzying array of intranet web sites (there are over 500 at last count), plus the company’s public information media portal, and a set of secure extranet portals for Air Products’ customers to access the latest in product, training, and safety information.

“With thePlatform, we get a powerful video publishing system that is as easy as point and click”

—Steve Cameron

Manager of Corporate Communication Technologies and Services  
Air Products



“The tools to create content are readily available—almost too available,” Herr adds. “But there was no infrastructure for managing, monitoring, and evaluating all of it, let alone doing it cost-effectively.”

### Setting up for Success

The key to a successful enterprise project is to define the goals, as well as the constraints within which you will need to work. Fortunately Herr, Cameron, E-Business Product Manager Steve Paris, and their internal business partners had the experience to set themselves up for success.

Three different departments were looking for more robust solutions: the intranet streaming group, the public web portal, and the company’s secure customer extranet. Each team had different needs, resulting in a broad list of technical requirements.

■ *Support for content delivery both on the Internet, and behind the firewall on Air Products’ Cisco Enterprise Content Delivery Network (ECDN).*

■ *Ability to monitor what people watched, and the quality of their experience—both for standalone video, and rich media presentations created with Accordent Presenter-PRO and MS Producer.*

■ *A controlled, but flexible, publishing process that provided preview and approval for some content, but allowed other content to sit outside that process.*

■ *Seamless integration with Air Products proprietary extranet.*

Despite the stereotype of enterprises wanting to control—and often develop—virtually every piece of software in their own datacenter, Cameron and company decided to evaluate a range of solutions, including a new breed of hosted software. After evaluating a range of products, Air Products selected the hosted option for thePlatform media publishing system™.

“We selected thePlatform because they provide a unique combination of technologies—particularly the integration of detailed reporting with comprehensive publishing,” says Cameron. “The ASP software offering has worked extremely well for us, and we always have the option of bringing the software in house—that flexibility gives us a lot of comfort.”

### “Actually, It Is What You Know”

Despite the old saying about *who* you know being more important, in the world of enterprise information technology, *what* you know is crucial. The first application



Air Products public video library powered by thePlatform: <http://www.airproducts.com/AboutUs/VideoLibrary/>

for thePlatform at Air Products was monitoring streaming inside the firewall.

Politicians take polls and movie studios watch box office receipts week to week, but for enterprise streaming media, knowing whether a particular video or presentation is a success is often a matter of guesswork, making the return on the investment difficult to measure. Air Products was looking for a way to know more, so it could do better.

Additionally, the company had recently adopted Cisco’s Application and Content Networking System (ACNS) enterprise content delivery network product line as its intranet streaming infrastructure. When deploying an ECDN, one of the thorniest issues is how many servers to buy, where to put them, and how to use them.

Most streaming quality of service (QoS) products perform a periodic check on a small portion of a single test file from sampling sites around the network. In contrast, thePlatform offers a unique tool set that silently monitors virtually every stream and provides detailed statistics on usage and QoS—including how long viewers watched each video.

Thanks to thePlatform, Ken Herr’s group can view data on how much of each video is watched. If a video isn’t keeping users engaged, thePlatform’s reports help diagnose whether the problem is the content or the infrastructure. “Whether it is knowing that

a particular piece of content missed the mark, or that we could repurpose a caching server rather than purchasing a new one, thePlatform lets us utilize our resources more effectively—and that translates into cost savings that go right to the bottom line.”

### Putting Your Best Foot Forward

The next phase was to update the company’s public web site with a searchable archive of digital media content. For this new application, thePlatform provided both content management and a turnkey brandable media portal.

“For the back end, we needed a Web-based workflow that let non-technical users upload, preview, and approve various media for our Web site’s video library,” says Steve Cameron. thePlatform allows media managers located anywhere to log in, upload any media format—from digital video to PDFs—publish the files to the delivery server, preview the final result, and approve it—all with just a few clicks. This easy-to-use, off-the-shelf toolset means that both initial training and the ongoing human cost of content management is kept to a minimum.

For the front end, Air Products also turned to thePlatform.

Like most companies, Air Products has a carefully crafted look and feel to their Web site, and making media an integrated part of that look and feel was crucial. “We didn’t



Microsoft .NET technology connects the secure APDirect extranet to thePlatform's tabbed portal interface

want a new portal—we already have a portal, and we already have a design,” Cameron recalls. “Media needed to fit seamlessly into that framework.”

Customizing thePlatform's built-in media portal technology to fit in the overall site design took only a few hours (see <http://www.airproducts.com/AboutUs/VideoLibrary/>), and users flow seamlessly back and forth between the company's portal and the media pages. Of course, the same QoS reporting is available for media monitoring on the public site.

### Fitting In, and Standing Out

Working exclusively on the Internet or the intranet is one thing, but today critical

business processes happen via secure extranets that tie companies and their customers and vendors together, and Air Products is no exception. The company's Air Products Direct (APDirect®) Customer Portal provides secure access to a host of features, but online access to Air Products' rich library of multimedia product information, training, and safety materials was missing from the mix. Making this material more readily available not only helps the bottom line, but sometimes literally can save lives.

While providing better access to rich media was important, it had to be done in a controlled way. Only certain content is appropriate for each customer. thePlatform allows Air Products to restrict content by class of customer (for example all liquid bulk gas customers). The technology even provides control right down to an individual user—[johnndoe@acme.com](mailto:johnndoe@acme.com) has rights to watch a particular video three times over a one week period.

To make it all come together, all of this back-end control needed to flow directly into the user experience of APDirect.

One hallmark of thePlatform media publishing system™ is that it was the first application of its type to fully embrace web-services, even before the term came into popular usage. To tie thePlatform's hosted application to APDirect, thePlatform used Microsoft's .NET technology to build a bridge between the systems.

When APDirect users first access the media section of the site—actually

generated in real time by thePlatform's ASP service—they are seamlessly registered and authenticated, then directed to the appropriate content library based on the type of customer account they have on APDirect.

“Every aspect of our application is web-services enabled,” says Ian Blaine, co-founder and CEO of thePlatform. “But most developers don't really want to work with web-services directly—it's not the most user-friendly environment.” Which is where .NET comes in.

thePlatform provides native support for both C# and VB.NET (as well as native support for Java and JSP, and any environment that supports WSDL) so that developers can take advantage of integrated development suites. While developers may need to learn a few new calls, the learning curve is extremely fast. With no prior experience with thePlatform's software developers' kit, moderately experienced Web developers can go from sample code to branded custom Web applications in hours or days, not weeks or months.

“By using thePlatform we were able to deploy a richer solution than we could have built ourselves, at a fraction of the cost, in a fraction of the time,” says Cameron.

### Looking Forward

Fall 2004 will mark the release of thePlatform media publishing system 5.0 enterprise edition™. This milestone release includes a powerful new business rules engine, and a host of new features and functionality targeted at the enterprise—including the ability to directly manage content on enterprise CDNs, even from the hosted software service.

Version 5.0 will also offer turnkey integration with Active Directory, LDAP, Microsoft Sharepoint, Microsoft Producer 2003, Accordent PresenterPRO, and a growing list of popular enterprise applications.

Where will Air Products go from here? Cameron says there are plenty of future opportunities, and thePlatform will likely be part of it. “In today's world we can't be sure how our needs will change, but thePlatform has demonstrated that they're out at the head of the curve, with proven features ready when we are.”

## Why Air Products Selected thePlatform

- Easy-to-use Web-based interface
- Rapid deployment using cost-effective ASP offering, with option to migrate to internal software
- Unique streaming quality of service (QoS) monitoring technology provides direct ROI
- Flexible configurable workflow
- Turnkey-customizable portals
- Web-services support allows easy integration with proprietary systems

The logo for thePlatform, featuring a stylized 'i' and 'n' with a red dot, followed by the text "thePlatform®". Below the logo is the text "Readers can obtain more information about thePlatform at: www.theplatform.com".

# Beyond News and Movie Trailers

*Venture Media's clips offer unique video content*

A quick scan of the top streaming portal sites reveals most are delivering virtually the same video content: news feeds, sports, and movie trailers, occasionally augmented with a smattering of fashion and music videos.

It seems creativity and unique branding grind to a halt when it comes to supplemental and alternative video content. Perhaps the key missing link is source targeting. Where does the streaming content manager find alternative programming? One source is Venture Media.

This Florida-based company owns a library of almost 1,000 video clips running 30 seconds to 8 minutes in length. Venture Media president Jim Duffy describes the content as “alternative fun learning.”

“We felt there should be streaming content available besides the usual news and trailers,” says Duffy. “And we were sitting on a tremendous asset that could help fill that void: An 800+ hour video library. So we set about repurposing this content and developed programming that works on multiple levels. It entertains, but with a high ‘Gee I didn’t know that’ factor. There’s some excellent take-away information here, from cooking tips to how to make your home child-safe. We trimmed the 800 hours down to 47 hours of prime evergreen content. This also kept the running times in line with the ‘Short Attention Span Theater’ syndrome of Internet streaming.”

Clip topics include pop culture, holidays and observances, lifestyle, health and fitness, history anecdotes, geography quizzes, military heritage, and travel.

Some of the company’s most popular clips come from its “Fun Facts of American History” series—one-minute clips that look at fascinating stories you never learned in history class, like the saga of America’s first subway, the real Moby-Dick, train crashes staged to promote railroad safety, and the origins of baseball’s 7th-inning stretch. Another popular series many viewers find addictive is “The Great American State Quiz,” where users are shown video clues unique to a particular state and asked to guess the correct state before the one-minute segment is over. Other clip series include “Explorers & Pioneers,” “50 Years In



*Venture Media's collection includes 39 adventure travel clips from the TV series Great Park Adventures.*

Military History,” “Nutrition & Weight Control,” “Home & Vehicle Safety,” and many more. All the clips feature professional narrators, animated graphics, background music, rare historical footage, and original Betacam videography.

Venture Media’s motto: Learning Can Be Fun. “Everybody loves trivia and everybody loves to learn, as long as it’s in a fun environment,” says Duffy. “Why else would *Jeopardy* be in syndication for 20 years and shows like *Who Wants To Be A Millionaire* keep coming back? Our content capitalizes on that thirst for knowledge. Our pop culture segments include subjects like ‘Back To The Drawing Board’—a series of ten one-minute clips focusing on bizarre inventions that were actually patented—and ‘Space Spin-offs,’ which look at ways the space program helps us on Earth. We also answer other common questions: Why do we throw rice at weddings? Where did Uncle Sam come from? And why is popcorn popped in movie theaters?”

A lot of the content also comes from television broadcast series produced by Venture. For example, 39 adventure travel segments were derived from the Travel Channel series *Great Park Adventures*. There are also 195 Latin cooking segments from the Spanish-language TV series *Buen Provecho*.

Duffy says the clips are used in a multitude of ways by their clients. “Sometimes the clips become part of a large ‘video vault’ on the site where viewers can search by topic. But often our customers get creative about using

the clips to their full potential. Some will create links from news stories that relate to the topic. For example, many of our World War II military heritage clips were timely links for the recent D-Day anniversary celebration stories. One site created a special ‘Homework Help’ channel where younger viewers can find our history and geography clips. A Spanish-language site rotated our Latin cooking clips in a ‘Recipe of the Day’ sidebar. Not only did they sell ads on that sidebar, but it created a sticky environment that brought users back daily. Our holiday clips provide a rich seasonal experience for the viewer, plus they provide another advertising opportunity for the portal. A florist or jewelry ad could be very effective tied to a Valentine video clip.”

Venture’s business model is based on licensing agreements. The company offers non-exclusive licensing deals, generally in one-, two- or three-year terms, although longer terms have also been negotiated. The pricing is based on two parameters: length of license period and quantity of clips. Site volume and number of downloads have no bearing on the price. License deals have been completed with companies ranging from Fortune 500 giants to small intranet hubs. In recent months, Venture has also been contacted by mobile wireless companies who see the unique content as the perfect way for customers to pass the time during a car pool commute or while waiting in long lines.

Duffy sums up the value of alternative streaming content: “People can only watch so much election coverage and war news. This content provides the perfect escape—without the guilt of brainless eye candy.”

more info



For more information about the Venture Media Content Library, visit the company's Web site, [www.venturemedia.tv/footage.htm](http://www.venturemedia.tv/footage.htm), or contact company president Jim Duffy at 954.474.7368

# How to Get Started With Digital Rights Management

## *A service provider's perspective*

**W**hile Digital Rights Management (DRM) technologies have been around for many years, only recently are they starting to find their way into practical business applications. For organizations seeking to leverage their digital media assets over the Web, DRM enables pay-per-view, pay-per-subscription, and user-authentication capabilities on streaming and permanent downloads to increase interactivity with end users and provide for new sources of revenue.

For organizations interested in utilizing DRM, there are two practical paths to consider. One way is to license the technology directly from a company like Microsoft. This involves programming, database management, and Web site integration, and may prove attractive for organizations that already are managing their Web hosting services in-house.

The other option is to outsource to a DRM service provider that licenses these technologies and operates the datacenter environment. Organizations that have outsourced their Web hosting services, will likely find that this makes more economical sense. With outsourcing, organizations can leverage the technical competency of a DRM service provider while eliminating the overhead costs associated with running a 24/7 data center.

If the decision has been made to use a DRM service provider, the next step involves locating a DRM Service Provider

that will meet your needs and budget. As DRM services may be applied to downloadable content as well as streaming media, it may make sense to look for a DRM service provider that also specializes in streaming media services. An added benefit in outsourcing DRM services through a streaming media service provider is that some do not charge for the DRM service, but provide it as a value-added feature for their core hosting services.

At PlayStream, a streaming media service provider that offers DRM capabilities, we examined the available technologies in the marketplace before deciding to implement Microsoft's Windows Media DRM 9 platform as part of our core streaming media hosting services. We selected Microsoft's DRM platform based on its excellent security options, rich features, flexible business models, and smooth integration into their popular Windows Media 9 technologies. Because PlayStream provides streaming as well as progressive download content storage spaces in a single account, the DRM technology provided a logical expansion to help our customers leverage the capabilities of our service.



For PlayStream's customers, DRM now opens up many new ways to deploy digital media. For example, let's say a music label is currently streaming free sound clips over its Web site to entice its consumers to purchase a music CD online for \$9, plus a shipping and handling fee of \$3. With DRM, the music label can now offer the option to purchase a downloadable version of the music CD for \$9—without charging for shipping and handling—that can be copied to CD.

Not only does the consumer save money on shipping and handling, but the consumer now receives immediate delivery of the product. For skittish consumers who aren't so sure they want to purchase the disc, the music label can use DRM to offer a three-day license to play back the content for \$3.

If the consumer likes the music and decides to purchase the full rights, a \$3 discount would be applied to the purchase price of the music CD or digital download. If not, the playback capability of the music will cease after three days. The license can also be designed for three plays instead of three days if the music label prefers. This is

We selected Microsoft's DRM platform based on its excellent security options, flexible business models, and smooth integration into its popular Windows Media technologies.

just one example of many possible business scenarios that can be designed using DRM.

### How Does It Work?

The first step a music label (or other content owner) takes is to complete the online DRM Profile, so that when consumers attempt to view content without having proper access, the DRM profile will be displayed with instructions for that consumer (e.g. instructions to pay, instructions on who to contact for further support, instructions to complete a survey, etc.). Next, the label will use PlayStream to create an online subscription and set various rights and permissions. The sections below depict some of the available rights that the music label can define as part of their subscription:

#### Subscription Rights for Using Windows Media Files on a Computer (DRM v9)

■ *AllowPlayOnPC*—This right allows the consumer to play the Windows Media file on a computer.

■ *Playcount*—This right specifies the number of times the consumer is allowed to play the Windows Media file.

■ *AllowBurnToCD*—This right allows the consumer to copy a Windows Media file to a CD in the Red Book audio format. Once a Windows Media file is copied to a CD, the Windows Media file on the disc is no longer protected.

■ *BurnToCDCCount*—This right specifies the number of times the consumer is allowed to copy a Windows Media file to a CD.

#### Subscription Rights for Licenses (allows users to specify when a license for a Windows Media file is valid)

■ *BeginDate*—This right specifies a date after which the license is valid. Before this date, the Windows Media file cannot be played. By default, the license *BeginDate* is set to the date the subscription is created.

■ *ExpirationDate*—This right specifies a date after which the license is no longer valid and the Windows Media file can no longer be played. By default, this right is not set and the license never expires.

■ *ExpirationAfterFirstUse*—This right specifies the length of time (in hours) a license is valid after the first time the license is used. By default, this right is not set and the license never expires.

■ *ExpirationOnStore*—This right specifies the length of time (in hours) a license is valid after the first time the license is stored on the consumer's computer.

■ *DeleteOnClockRollback*—This right deletes the license if the consumer's computer clock

## You can integrate “shopping cart” technology to implement pay-per-view capabilities.

is set to an earlier time. By default, this right is not set and licenses are not deleted when the clock is rolled back.

■ *DisableOnClockRollback*—This right disables a license if the consumer's computer clock is rolled back. The license is enabled again when the clock is corrected. By default, this right is not set and licenses are not disabled when the clock is rolled back.

Additional rights are available for areas such as controlling access to SDMI or Non-SDMI compatible devices, transfer counts, etc., but they are beyond the scope of this article.

#### Different Needs, Different Scenarios

To help simplify the settings of the various rights, PlayStream provides popular scenarios and the corresponding rights that would be utilized in creating the subscription online.

##### Basic Playback

For basic playback functionality, allow the following rights:

- *AllowPlayOnPC*
- *AllowBackupRestore*

##### Promotional Material

To distribute promotional material for limited use, use the following rights:

- *AllowPlayOnPC*
- *BeginDate and ExpirationDate* (to limit the time during which the license is valid)
- *DeleteOnClockRollback* or *DisableOnClockRollback*
- *MinimumAppSecurity* (set to a low value so that more consumers can play the Windows Media file)

##### Rental

To let consumers play a Windows Media file for a period of time starting from when they first open the file, use the following rights:

- *AllowPlayOnPC*
- *ExpirationDate*
- *ExpirationAfterFirstUse* or *ExpirationOnStore*
- *DeleteOnClockRollback* or *DisableOnClockRollback*

Other scenarios are available, including setups that will allow consumers to play

their Windows Media files on portable devices.

#### Encoding the Content

Once the music label sets the various rights, the subscription process has been completed. The next step will be to encrypt the Windows Media content. During the encryption process, the media content will be assigned a unique key/content ID for the purpose of data security. The encrypted file is then associated with the subscription. At that point, the encrypted file is ready for distribution, either as downloadable content or streaming content. When a consumer attempts to access the encrypted media, the consumer's media player will automatically request a license key from PlayStream that allows for decryption and playback. Without the license key, the media will not play.

There are more sophisticated ways to utilize Windows Media's DRM service, currently running in version 9. For example, you can associate multiple key/content IDs with a single subscription. You may also create a DRM encoder profile to encode multiple pieces of content with the same key/content ID. In that scenario, you could encode 100 files using the same key/content ID and only have to associate that key/content ID once with a subscription to generate a license that works for all 100 files. (It's worth noting that Microsoft's Windows Media DRM 10 is available now in a limited-release beta format and upon its full release, will offer even more features.)

You can also use the DRM encoder profile to generate encrypted live streams. Another possibility is to integrate “shopping cart” technology to implement pay-per-view capabilities. While these topics are beyond the scope of this article, an awareness of the capabilities of DRM can help you develop an implementation plan.

more info



For more information about how to use the PlayStream DRM services, visit PlayStream's Web site or call:

[www.playstream.com](http://www.playstream.com)  
800.874.8855

# Connect, Record, Share

**Mediasite speeds and expands enterprise communications by automating the recording and distribution of rich media.**

Although it's been around for more than 10 years, streaming media technology has yet to achieve widespread adoption in the enterprise. Indeed, the words "streaming media" still may conjure up bad memories of time-consuming, costly, and complex processes that, in the end, produced poor-quality streams and an unpleasant end-user experience. Early streaming products, adapted from entertainment applications, were simply not suitable for enterprise use and organizations were forced to hire specialists to perform hours of pre- and post-production work before a presentation or lecture could be available on the Web.

Today, broad use and integration of streaming media as a vital component to online communications remains constrained by the limitations of first-generation tools, and the residual psychological barriers they created. In addition, despite improvements to supporting technologies and infrastructure, the creation of high-quality live and on-demand rich media presentations—audio and video synchronized with other visual content—is still a difficult, multi-step process without the right tools. Sonic Foundry's Mediasite™ solves this problem by simplifying, automating, and speeding the way rich content is captured, recorded, and archived for re-use.

## The Sonic Foundry Legacy

Mediasite builds on Sonic Foundry's heritage as a rich media pioneer. For more than a decade, the Sonic Foundry name has been synonymous with practical, innovative rich media products for content creation, distribution, and management. Its PC-based sound and video creation and editing software programs provided a quantum leap in power and functionality, with no added complexity for the user.

Today, the company continues in its rich media leadership position with its growing line of Mediasite products for recording, streaming and archiving multimedia presentations, and videoconferences. Sonic Foundry products are different, because they are created differently—by listening to customer and market needs, and then creating powerful, practical product and service offerings that meet these needs precisely.

In the not-too-distant past, enterprise users who wanted to publish their presentations to the Web had two options: Use special authoring tools or hire a production services company. Now they have a third option: Mediasite.

## Why Mediasite is Different

Through its unique real-time rich media engine that automates all of the complex processes typically associated with creating high-quality rich media content, Mediasite is changing the way organizations think about and use rich media. The result is a fast, convenient, and affordable way to broaden learning opportunities, maximize the sharing and understanding of information, increase communication frequency, and improve productivity.

Available in both rackmount and mobile configurations, Mediasite debuted in 2002 as the industry's first highly automated real-time rich media presentation system and has quickly become a "must-have" appliance for presentation rooms in education, corporate, healthcare, and government facilities.

The Mediasite presentation recorder is trusted by Fortune 500 companies, education institutions, healthcare organizations, and government agencies for a variety of critical communication needs, including online training, corporate communications, rich media publishing, webcasting, product

marketing, and Web-based distance education. Sonic Foundry's secret to success is that it approaches the content creation challenges of rich media communications from the non-technical presenter's point of view, creating a presenter-friendly system that simplifies the recording process while providing complete flexibility to handle any type of complex presentation.

Mediasite is primarily differentiated in six ways:

- **Unmatched Graphics Capabilities**—Only Mediasite has the exclusive VersaVisual™ channel for capturing, synchronizing, and processing any type of graphic input along with audio/video content— all in real time. This virtually eliminates the special production requirements to handle complex engineering diagrams, detailed medical imagery, intricate drawings, and other applications where visual clarity is critical.

- **Ease of Use**—It is simple to use and designed to fit the work practices and preferences of non-technical presenters/users. A 'single button' user interface gives presenters one-touch recording capabilities without interfering with their presentation style or content.

- **Speed**—Mediasite provides real-time capture and delivery of presentations, thereby eliminating all the pre- and post-production requirements of competing systems. In many cases, the rich media file is created up to 10 times faster than conventional Web presentation approaches allow.

- **Versatility**—Unlike competing systems that limit presenters to PowerPoint® slides, Mediasite is a fully integrated hardware and software system that provides the flexibility to capture on-the-fly virtually any kind of data output from any presentation device and instantly turn it into a Web-based interactive rich media file for live and on-demand access.

- **Economics**—The fastest ROI and lowest cost of ownership. By eliminating production and authoring, Mediasite significantly reduces the time and cost of creating rich content. In addition, because there are no seat- or stream-licensing fees users can

With Mediasite, everything is automatically captured,  
synchronized, and streamed in real time.

communicate with large groups as often as needed without racking up huge expenses.

■ *End-user Experience*—A browser and a media player are all that's needed to view a high-quality presentation. There's no proprietary software or plug-ins to download. Audience interactivity is available via polling and Q&A. For on-demand users, Mediasite's navigation capabilities allow users to preview thumbnails of a presentation, then by clicking on the desired thumbnail slide, the audio, video and accompanying graphics are quickly synchronized to exactly that portion of the presentation.

### Benefits of Mediasite

The tangible benefits of Web-based rich media have been well documented. In the case of online training, for example, keeping employees off airplanes and out of hotels results in savings that companies can clearly measure. But what about the intangibles? It's much harder to quantify the ripple effect of using rich media to communicate with greater clarity, frequency and convenience than ever before.

Mediasite's Windows-based dual-pane viewer provides an optimal viewing experience of synchronized video and visuals, giving audiences the full benefit of high-resolution rich media presentations. Furthermore, because Mediasite offers on-demand functionality, employees enjoy greater flexibility in when and how they access information.

Companies that use Mediasite for their one-to-many communication needs report a transformed workplace where a culture of rich media usage begins to develop. Oftentimes, although they began providing Web presentations for one specific application, they soon identify other areas within the company that could benefit. Meanwhile, people in the field or at a satellite office feel more connected to corporate headquarters, and all employees quickly become accustomed to going to the company's Intranet for rich, timely information. Users also report experiencing the concept of time shifting, as utilization of on-demand presentations is 400-700 percent greater than live



events—clearly illustrating the preference for convenient anywhere/anytime access.

### On the Verge

It seems the use of streaming media has been poised to explode for years now. While it is becoming more commonplace, it's still typically reserved for special events like quarterly CEO webcasts at large companies. Sonic Foundry believes that's about to change. Although relatively new to the business environment, rich media presentation recorders that feature audio, video and supporting collateral show great promise to become a powerful, routine communications vehicle.

As technologies matured and network infrastructure improved, the final piece for enabling the growth of rich media is a highly automated, self-service product like Mediasite that seamlessly fits into business processes. Mediasite frees communicators to work more efficiently while extending their reach and the value of their content. They don't have to learn new software, modify their business processes, or schedule the capturing and encoding of the presentation in advance. Simply plug into the system and present as usual. No special skills required.

On-the-fly capture is important because it allows the person delivering the presentation to be as spontaneous as he or she wishes and even customize the presentation based on the live feedback from viewers. It also means there's no pressure to finish the slides or other collateral in advance of the presentation, allowing subject experts to communicate their message and move on, instead of waiting for a specialist to perform all of the pre- and post-production requirements.

Think back before PowerPoint software was available on practically every desktop in

the company. It wasn't that long ago when creating a business presentation was the responsibility of the graphics department, required specialized tools and skills and, even then, was only done on special occasions. Today, most business professionals can create their own presentations using PowerPoint, but the thought of putting that presentation on the Web, with synchronized audio and video of the speaker, remains daunting.

By and large, even the businesses that have progressed to the point of putting their rich media presentations on the corporate network or Web do so only for special events. The reason for this is perfectly clear when one considers the processes they use. It's usually a multi-day production job for the company's already-taxed audio/video and IT departments, or the company outsources the project to webcast production specialists, where they pay top dollar for the time, service and equipment.

However, just as people now create PowerPoint presentations at their desktops without giving it a second thought, it won't be long before business users will routinely use rich media presentation systems like Mediasite to create and communicate to anyone anywhere on the Internet.

In summary, Mediasite provides customers with unmatched performance, flexibility, and graphic capabilities. While most Web presentation systems limit users to PowerPoint, Mediasite's unique dual-channel RGB recorder gives presenters the unprecedented capability to use any kind of sophisticated graphics. Everything is automatically captured, synchronized, and streamed in real time. No authoring. No pre- or post-production. No streaming- or seat-licensing fees. No worries.

more info



Readers can obtain more information about Sonic Foundry's Mediasite at:

608.443.1607  
www.sonicfoundry.com  
info@sonicfoundry.com

# Business Video Breaks Down Borders

*Kontiki helps Ernst & Young improve business communications & training*

In an economic and regulatory climate that requires businesses to immediately and effectively communicate critical information internally, Ernst & Young is deploying Kontiki for full-screen, high-touch video communications throughout its global operations.

Ernst & Young, one of the world's largest professional services firms, is committed to restoring the public's trust in professional service firms and in the quality of financial reporting. Employees in more than 140 countries face challenges internally as well as externally as they work with colleagues to understand the implications of recent legislation, and work with clients to ensure that corporate governance and adherence to strict ethical standards form the cornerstones of their businesses.

Today, a business video-on-demand solution from Kontiki is allowing Ernst & Young to cost effectively deliver high-quality

video communications to all employees. Here are just a few examples of the types of communications for which they use Kontiki:

- To effectively communicate critical directives in corporate governance, regulations, and strategic practices from the very top of the organization to every employee.

- To ensure that members of globally distributed practice groups stay on the same page and complete their jobs more effectively with targeted communications.

- To provide effective education of new hires, including recent college graduates, so that they meet the high standards of the firm.

- To foster organizational knowledge and adherence to evolving best practices as determined by leaders within each business unit or industry group.

- To deploy effective "high-touch"

communications and training to all employees without requiring expensive upgrades to the existing network infrastructure.

## Business Video to Promote Communication and Transparency

The Sarbanes-Oxley Act (SOA), passed in mid-2002, was meant to address the crisis in corporate confidence. SEC regulations are now beginning to spell out more precisely what the Act will mean to companies. But one thing is clear: businesses must be more transparent, more accountable—and pay more attention to what is happening internally—if trust is to be restored. This includes managing intangibles such as the corporate culture and organizational ethics.

Ernst & Young believes a "principles-based approach" to corporate governance requires that key changes in policies and procedures be thoroughly defined by those at the top—and communicated quickly and

"We believe that by using business video on demand for corporate communications and training, we can maximize the return on our greatest asset, our employees."

—John McCreadie  
CIO, Ernst & Young



Ernst & Young, one of the world's largest professional services firms, is committed to restoring the public's trust in professional service firms and in the quality of financial reporting. Staff in more than 140 countries face challenges internally as well as externally as they work with colleagues to understand the implications of recent legislation and work with clients to ensure that corporate governance and adherence to strict ethical standards form the cornerstones of their businesses.

#### Business Challenges:

- Communicate critical directives from the very top of the organization to every employee
- Ensure members of globally distributed practice groups can stay on the same page with targeted communications
- Deploy high-quality video communications to more than 106,000 employees worldwide without expensive network hardware and bandwidth upgrades
- Support a highly mobile workforce

#### Kontiki Solution

- Full-screen, high-quality video communications that reach 106,000 employees worldwide
- Narrowcast communications that are securely targeted to specific practice groups
- Grid Delivery Technology that utilizes existing PC and server resources so rich media has minimal impact on network resources
- Online and offline video access, combined with delivery optimizations based on location to address mobile user needs

effectively to the ranks.

But how to communicate effectively with impact and power? To John McCreddie, chief information officer (CIO) of Ernst & Young, the answer was obvious: business video. "We believe that by using business video on demand for corporate communications and training, we can maximize the return on our greatest asset, our employees," McCreddie says. He asked the Ernst & Young IT department to investigate solutions that would allow him to utilize business video for globally distributed communications and training.

Only Kontiki's software enables Ernst & Young to meet all of its criteria for business video solutions, including the critical cost requirement of avoiding expensive upgrades of network hardware and bandwidth.

#### Searching For a Solution

Ernst & Young had a number of technical "must haves" when it began searching for a solution. They needed a solution that would help them accomplish a number of objectives:

- Provide sufficient functionality and flexibility to reach all 106,000 employees in a timely manner through on-demand and "push" video broadcasting (automatically sending video to selected recipients)

- Enable "narrowcast" communications that are targeted and secure, so that geographically dispersed practice groups could efficiently communicate

- Enable flexible video delivery options, including push, pull (fulfilling user on-demand requests for video), subscription (periodic video delivery), and email

- Support a highly mobile workforce where employees often move between offices or need to access information from locations outside of the corporate network

- Deliver video globally without requiring expensive network upgrades or impacting country network capacities

- Provide the capability to protect sensitive corporate information by leveraging digital rights management technology and existing directory services.

The firm investigated several business video technologies including hardware-based multicasting, hardware-based caching servers, and software-based grid delivery.

But only Kontiki's software enables Ernst & Young to meet all of its criteria for a business video solution, including the critical cost requirement of avoiding expensive upgrades of network hardware and bandwidth. More specifically, Kontiki is able to do this through its Grid Delivery Technology™ which leverages the normally underutilized power of desktop PCs and servers by forming a software-based delivery grid within Ernst & Young's network. This is done with complete IT control and security and will ensure video delivery has minimal impact to the network.

#### The Solution

Kontiki is providing Ernst & Young with a complete end-to-end solution for business video on demand with network-friendly

delivery for all employees worldwide. The solution includes three components:

- *Kontiki Delivery Management System 3.0.* The DMS 3.0 is a software suite which allows Ernst & Young to publish, protect, deliver, and measure video and other rich media. This enables video communications and training for all Ernst & Young employees worldwide. It also includes Grid Delivery Technology that enables secure and centrally managed delivery of video, while greatly minimizing the amount of bandwidth and hardware required for full screen, high quality video communications.

- *System Integration.* Using XML Web Services, Kontiki is seamlessly integrated with Ernst & Young's enterprise-wide list management technology, the Global List Management System (GLMS), to allow flexible narrowcast delivery of video to targeted groups as well as broadcast communications to the entire workforce.

- *Business Media Services.* Kontiki worked together with Ernst & Young in identifying opportunities to easily and cost-effectively create video in house using standard software tools and inexpensive digital video cameras. For example, Kontiki helped Ernst & Young set up several "self-service" video production studios for less than \$10,000 each.

How has the system worked so far? The deployment has been completed to over 106,000 desktops/laptops worldwide with high quality video communications and training successfully being delivered to achieve the stated business goals.



For more information, to read additional case studies, and to see a demonstration of Kontiki's Delivery Management System, please visit [www.kontiki.com](http://www.kontiki.com). To discuss implementing Kontiki's video on demand solution in your enterprise, please contact Kontiki's corporate offices at 408.730.3000.

more info

# Enterprise Video Streaming Applications and Products

*Streaming is easier—and cheaper—than ever before*

**W**hen people communicate electronically, they can use text (email), audio (telephone), and video (television). Various studies have shown that message comprehension increases as you add the audio and even further if you add the video component. Streaming video (or media) allows business people to communicate with their co-workers, customers, or suppliers more effectively than they can via standard email or voice.

Streaming video has been around for several years but has been slow to gain acceptance for several reasons: Poor video quality, network bottlenecks, lack of standards, and high cost. But new equipment, techniques, standards, and services have emerged to make streaming video an excellent tool for

enterprise communications. Market studies have shown that streaming is forecasted to grow at double-digit rates through 2007.

## Applications

Before purchasing and installing a streaming video solution, enterprises need to determine both the nature of the application and the benefits they seek. Let's look at a few scenarios where streaming video has had a major impact.

### Training

Imagine being able to tune in to a DVD-quality video about enhancing presentation techniques right at your PC. Just a click of a mouse and you're viewing a 20 minute video. Pause, fast-forward, or rewind the

video at will. There's nothing better than getting your own private tutorial at your own desktop.

### Product Introduction

Enterprises introduce new products all the time. How do you brief your sales force or resellers on the products? That's simple: Just have your product manager get in front of a camera, connect the camera to a web-casting appliance, and have your remote audience tune into the broadcast from their PCs. What could be easier?

### Event Broadcast

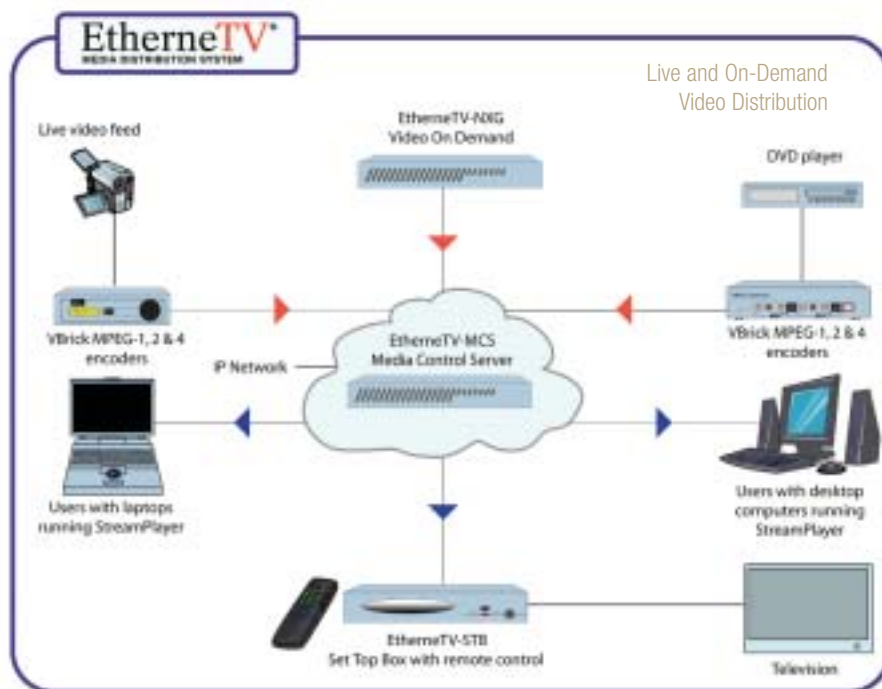
A company wanted to stream an employee award ceremony to the staff at field offices around the world. What better way

## Transporting Video over IP

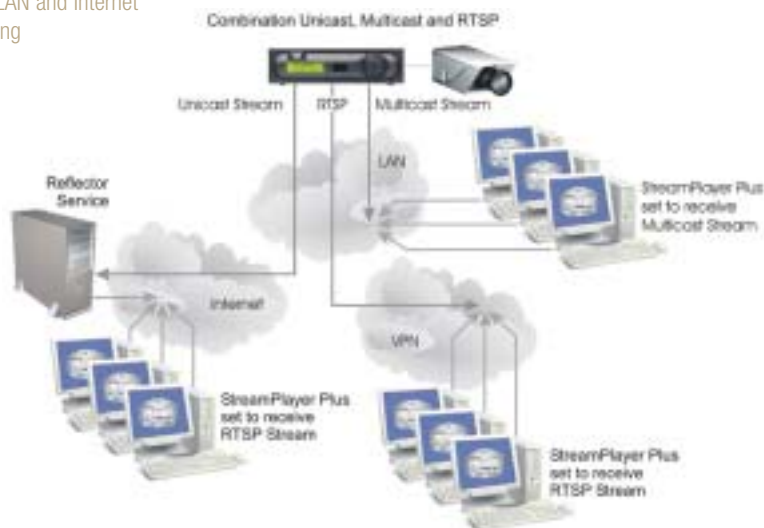
Modern IP networks are fully capable of transporting many DVD-quality video streams without impacting data and voice traffic. Within a typical enterprise, Ethernet networks are composed of 10/100 Mbps switched ports on Ethernet switches and routers. Therefore, individual users receive their own 100Mbps connection to the switch. A typical MPEG-2 stream is 5Mbps, leaving 95Mbps available for other traffic.

Video streams can be unicast or multicast over IP networks. With unicast streams, an individual stream is sent to each participant. Unicast is ideal for stored video distribution where each employee can receive his own stream and pause, rewind, fast forward, at will. Multicasting is used when a live stream such as a CEO speech is being sent to hundreds of employees simultaneously. Multicasting conserves bandwidth because only one stream is sent from the source, and the IP network switches replicate the stream as needed. Although each viewer receives his own stream, the stream only travels from the local switch to the viewer's PC instead of the origination point.

*EtherneTV is a video distribution system that can deliver live or stored DVD-quality video to PCs, Macs, or TVs. Very scalable, it can be used in a building, campus, or over wide-area-networks internationally.*



## Hybrid LAN and Internet Streaming



The VBrick VBXcast MPEG-4 network video appliance can simultaneously stream over LAN, VPN, or the Internet. It has the capability to stream using IP Multicast, Unicast, or RSTP.

to improve morale and honor the recipients than streaming the event live—not only to co-workers but also to the employees' families at home?

### News Distribution

Many large enterprises make frequent company announcements to their employees. Why not have your CEO get in front of a camera and stream the message simultaneously to all employees, whether they are at their PCs or in a common area such as a meeting room or cafeteria? Imagine the powerful impact the news will have if provided visually vs. standard email or memo.

### Videoconference Distribution

Currently, many companies have standard ISDN-based videoconference systems. These are typically referred to as group systems that allow two or more parties to communicate. Now, take the video feed from each endpoint and connect it to a streaming appliance. All of sudden, anyone located anywhere can view the videoconference live at their desktop.

### Building a Streaming System

So how can an enterprise use visual communications to enhance morale and increase productivity, without spending millions of dollars? In the next example, you'll see how an enterprise can build a streaming video system without breaking the bank.

Let's start with a streaming video appliance. This product accepts standard NTSC video and audio from camera or other video

source and connects to your standard Ethernet network. *Voilà!* You now have a streaming system that can reach hundreds of people for under \$5000.

Now, we can improve the video for the local employees by streaming MPEG-2-compressed, DVD-quality video on the LAN, while we simultaneously stream lower-quality video over the Internet to the remote employees. This can be done by upgrading the streaming appliance to a dual encoder. The price remains under \$10,000. In addition, we can add several low-cost set-top boxes that will allow groups of people to view the video on standard TV monitors.

Next, let's add the capability to record any video stream and make it available on demand. By purchasing a video-on-demand server an enterprise can make any recorded video available to employees both inside and outside the corporate location. Video-on-demand servers vary greatly in price, but typical starter systems run about \$15,000. In addition, we can add a media control server that will provide an easy-to-use interface for PC and TV users, allowing them to select and view both live and stored streams. Like the video-on-demand servers, these can vary in price, but they generally start at \$5000.

We now have built a full video distribution system that can permit thousands of employees to watch training videos, company broadcasts, product introductions, and even news programs all for under \$30,000. The next step is the return on the investment. Where are the savings and how fast can we get a payback on the system?

## Video Compression

Chief among the innovations that has made streaming video attractive for communications are the improvements to video compression. The Moving Picture Experts Group (MPEG) is a standards body that works with various organizations to maintain and develop new video compression and transport standards. MPEG-1 first came out in the 1980s but has now been superseded by MPEG-2 (used for digital TV and DVD) and recently MPEG-4. As new standards evolve, video quality increases while the required transport bandwidth decreases, making it easier to deliver higher-quality video over lower-speed networks.

In addition to the MPEG standards are a number of proprietary compression techniques available from vendors such as Microsoft and RealNetworks. Although they provide very good video quality they require that viewers use proprietary video players to decode and view the video.

Typically the savings will come from several areas:

- **Travel savings**—train employees and partners remotely

- **Time to market**—better information distribution allows companies to design and launch new products more quickly, getting a jump on competition

- **Employee morale**—more personal communications with employees leads to happier employees and therefore more productive employees

- **Informing Customers**—announce new products using streaming video and reach your audiences quicker and with more effective messages.

### Conclusion

Streaming video systems are a valuable tool for enterprises to improve communications, which results in faster growth and healthier bottom line. New techniques have made streaming video a low-cost, easy-to-use alternative to non-visual methods. It's easy to see why major financial institutions, aircraft manufacturers, pharmaceutical companies, government agencies, and educational institutions have implemented these types of video solutions.



For more information about VBrick's streaming solutions, visit their Web site or call:

www.VBrick.com  
203.265.0044

# Simplifying Rich Media Communications

*The Digital Media Delivery Solution rises to the challenge*

In today's global business environment, the need to improve corporate communications and effectively train a distributed work force while containing costs have forced both business and IT decision makers to search for new, yet reliable, cost-effective solutions.

Streaming audio and video can offer enterprises the ability to help dramatically increase the efficiency and effectiveness of their corporate communications efforts – from rich media corporate portal content, to live webcast presentations, to distance education for employees, and more. While these efforts were largely considered “science projects” just a few years ago, the maturation of enterprise IT infrastructure, streaming and content management technologies, now mean that digital media publishing can help meet the needs of large organizations with an efficient cost model.

However, implementing a complete digital media publishing solution requires the integration of many technologies, especially in large organizations with many distributed small- or medium- sized locations. Even though these organizations are most likely to significantly benefit from digital media publishing, addressing the challenges associated with the introduction of rich media publishing has seemed cost prohibitive.

Furthermore, in organizations where digital media implementations are currently used, these solutions frequently introduce

additional complexities for IT organizations. As a result, many of these corporations have limited the expansion of streaming media, despite acknowledging its value as a compelling way to improve communications throughout the enterprise.

## Requirements Defined

PEREY Research & Consulting, Inc. recently performed a rich media publishing study that identified those business requirements that would provide the promised customer benefits along with a solid return on investment:

- **Automated distribution:** Create content delivery groupings and business rules so that content could be automatically populated to the desired office or group of offices, ideally with “embargo” and “kill” options.

- **Flexible recording and delivery options:** Ability to remotely control multiple encoders, providing content at multiple bitrates, during a live broadcast/multicast.

- **Easy multimedia content creation:** Ability to easily synchronize presentation content, such as graphics, slides and pre-recorded video files prior to or during a live presentation.

- **Simple, flexible control over content presentation and viewing:** Ability to make “look and feel” changes without IT intervention.

- **Sophisticated search capabilities:** Allow users to find content via keyword or pertinent metadata (e.g., date, time, speaker)

through a standard web browser.

- **Asset management tools:** Ability to allow digital media content (including word processing, spreadsheets, PDF, graphics, audio, video) to be easily uploaded and stored.

- **Reporting tools:** Ability to provide information on viewership by media type viewed, length of view, popularity of content and custom statistics.

- **Open standards based:** Ability to view content on any platform and host content on Unix or Windows.

- **Security:** Provide login controls and password protection at multiple levels (e.g., content type, group, business unit, administrative functions that map to systems such as LDAP).

- **Ease of use:** Allow operation by non-technical personnel, without requiring IT's assistance.

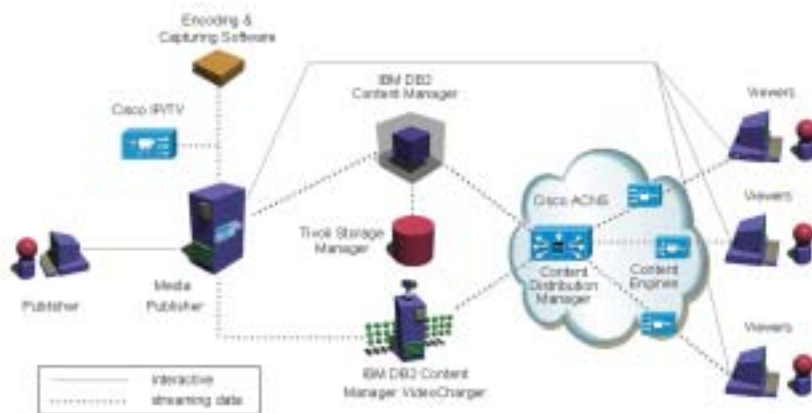
- **Small footprint:** No additional software needed on viewer's or administrator's desktops.

- **Flexibility:** Open, flexible architecture so that legacy systems and future products can be easily integrated.

Addressing these diverse requirements in a streamlined manner demands a turnkey digital media publishing solution. The Digital Media Delivery Solution (DMDS) from IBM and Cisco Systems, augmented with software from Media Publisher, Inc. (MPI), addresses this need.

The DMDS enterprise video communications solution pairs IBM Content Manager running on IBM eServers with the Cisco Application and Content Networking System (ACNS) for scalable content delivery throughout a distributed enterprise. MPI software adds a powerful rich media publishing capability as a front-end to the solution. With a turnkey system like DMDS, PEREY Research & Consulting found that a large company with 23,000 employees can cost justify the implementation within the first year of use.<sup>1</sup>

The Digital Media Delivery Solution is sold and implemented by IBM. The combined offering consists of several integrated capabilities.



### IBM Provides:

IBM provides the one-stop shopping experience for the complete solution. It is based on powerful IBM eServers and storage products and can include technology designed to manage network performance by controlling bandwidth utilization.

The solution also provides enterprise content management with IBM DB2® Content Manager. A key component of the IBM ECM (Enterprise Content Management) portfolio, DB2 Content Manager is IBM's next-generation ECM infrastructure for information integration. Its functions support transactions, security, process integration and lifecycle management. In a single, open and comprehensive framework, DB2 Content Manager handles the management, sharing, reuse and archiving of all types of digitized content. DB2 Content Manager supports HTML- and XML-based Web content, images, electronic office documents and rich media such as digital audio and video.<sup>2</sup>

To help ensure a smooth implementation, IBM Global Services provides overall planning, installation and testing of the Digital Media Delivery Solution, including business and systems consulting, design, project management, procurement, and cabling. One of the world's leading services providers, IBM Global Services brings the IT, audio, and video skills needed to implement a successful digital media project. These capabilities have been honed through years of consulting for and deploying digital media solutions of all sizes. From consulting, planning, and design through integration and testing, IBM Global Services can offer end-to-end services solutions for digital media delivery.

### Cisco Provides:

The Cisco Application and Content Networking System (ACNS) Software enables organizations of all sizes to help reduce costs, drive productivity and increase revenues by extending strategic applications from the data center to the branch. Cisco ACNS Software combines the technologies of demand-pull caching and pre-positioning for accelerated delivery of streaming media, and runs on Cisco Content Engines, Content Distribution Manager (CDM), and Content Router hardware platforms. Together, these intelligent hardware and software components provide:

- Content-edge delivery using the Cisco Content Engine appliance or Cisco Content Engine network module to help avoid WAN congestion by storing and delivering content at the network edge.

- Central management of media distribution and remote devices using the Cisco CDM appliance and Cisco Works software suite.

- Content routing capabilities using the Cisco Content Router appliance for HTTP routing and using the Web Cache Control Protocol (WCCP) embedded in routers and switches with Cisco IOS® Software.

### MPI Provides:

Media Publisher was designed to bring all pieces of a rich media solution together, including streaming formats and protocols as well as delivery and storage mechanisms, while adopting a process-driven workflow that includes creating/aggregating, packaging, distributing, presenting and reporting.

*Create and Aggregate:* Help simplify the capture, gathering, and broadcasting of content, allowing simultaneous use of multiple encoders and formats, and creating immediately deployable archives for video-on-demand.

*Package:* Easily organize and manage live and existing on-demand content, bundle relevant metadata, assign viewer access rights, and apply security, network distribution, and business rules.

*Distribute:* Help to cost-effectively and seamlessly distribute to user-specified edge caches, such as Cisco Content Engines (CEs), to support a distributed architecture for multi-site deployments and control exactly where and when content should be directed.

*Present:* Intelligently present relevant content on the desktop using a dynamic web portal engine, either stand-alone, or in conjunction with an enterprise portal solution, and any media player.

*Report:* Provide a range of report formats on media usage, viewer activity, and program popularity, aggregating data from the edge caches (Cisco CEs).

By streamlining the process and removing technical complexities, Media Publisher is designed to allow IT to hand off the day-to-day management and publishing of rich media to the business users themselves, thus helping to drastically reduce manual intervention while retaining overall IT control. As a result, customers can easily and cost effectively adopt rich media publishing

while enjoying the business benefit of improved communication throughout the enterprise.

### Proven Customer Benefits of the Digital Media Delivery Solution:

- Help to save time and costs by implementing a pre-configured, integrated rich media infrastructure

- Extend the audience while increasing the impact of company meetings, online training and corporate communications

- Help enhance the viewer experience and improve network efficiency by pushing files to the edge of the network

- Gain control and measure program popularity by monitoring usage with advanced, dynamic reporting capabilities

- Improve communication flow and create a sense of community for dispersed employees

- Help enable non-technical users to easily deliver live broadcasts and publish videos on-demand, helping to minimize the time and expense required to deliver them

- Leverage current and future streaming technologies and infrastructure investments to help further enhance ROI

### Conclusion

Digital media systems have finally come of age and offer a compelling argument for achieving both rapid cost containment and enhanced corporate communications. Coupled with the inherent advantages a turnkey digital media publishing system provides in terms of rapid implementation and pre-configured integration, IT departments have the opportunity to implement a robust, cost-saving infrastructure by leveraging the Digital Media Delivery Solution.

1. Please go to [www.media-publisher.com/tco](http://www.media-publisher.com/tco) to request a copy of the study.

2. Reprinted by permission from *IBM DB2, Content Manager, V8.2* copyright 2003 by International Business Machines Corporation.

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For more information, including details on Digital Media industry solutions from MPI, IBM and Cisco, visit:

[www.media-publisher.com/library](http://www.media-publisher.com/library)

[www.ibm.com/solutions/digitalmedia](http://www.ibm.com/solutions/digitalmedia)

[www.cisco.com/go/content](http://www.cisco.com/go/content)

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# It's All in the Delivery

*Limelight Networks makes the difference for online rich media*

**W**ith the widespread adoption of broadband connectivity in homes and businesses, the demand for rich media content continues to grow rapidly. This trend will escalate as businesses increasingly leverage the Internet for services such as legal media downloads, software distribution, and corporate webcasting. Launching a service capable of routing large files and high-quality broadcasts to content-hungry visitors quickly and efficiently is crucial to the long-term success and profitability of any online enterprise.

The challenge for providers of rich media content is to deliver their product flawlessly at the lowest possible cost. They are succeeding via a new breed of service provider called a Digital Delivery Network (DDN), specialized in making high-capacity, fast-response, and ultra-reliable online media distribution an affordable option. Pioneering DDN Limelight Networks has been delivering rich media for some of the Internet's most heavily trafficked properties since 2001 and has developed a unique understanding of the requirements for distributing this content.

DDNs like Limelight Networks are expanding and enhancing services in order to address the specific needs of scalability, faster delivery, and increased reliability for

online businesses. Unlike legacy content delivery networks (CDNs) designed primarily to handle static pictures on Web sites for faster page loads, Limelight Networks was designed to scale with the large file sizes and expanded audiences that make up today's digital media delivery universe. This means increased server capacity, enhanced Internet backbone connectivity, and strategically placed infrastructure to reach the largest possible audience. For corporate communications, a DDN's high-capacity architecture supports the ability to bring global teams together quickly to collaborate online more affordably than they can via traditional teleconferences or in-person meetings.

Most enterprise content providers find it makes practical sense to outsource the delivery of their digital assets based on the cost and complexity of in-house management. But how does one choose a reliable delivery provider, and what should companies look for in a partner? Digital content owners can meet the growing demands of



consumers by ensuring four key elements are met by their DDN partner in the distribution of large media files and webcasts. By addressing specific needs of speed, reliability, flexibility, and innovation in creating unique solutions, a DDN can enable online business plans to flourish.

## **Lower Costs, Higher Speeds**

By placing distribution points in strategic locations and leveraging direct connectivity and peering into major networks, Limelight Networks ensures that content is routed quickly from the closest logical location. Rather than placing capital-intensive equipment inside every network, Limelight Networks locates storage and delivery servers at vital interconnection points where IP backbones converge. This ensures minimal "hops" and a more engaging experience for live events as well as lower connectivity costs. In addition, media is stored and distributed only from locations where there is demand, reducing costs by avoiding unnecessary seeding of items to less-popular locations.

As filesizes continue to increase and requests for those files balloon, a DDN architecture design will accommodate more content and more hits from larger audiences. An alternative to utilizing a DDN—relying on a single hosting facility or a single Internet connection—can pose numerous challenges for content providers. Lack of redundancy in media routing and distribution can lead to unwelcome latency or worse, a site crash. DDN technology architects

## **IFILM Chooses Limelight for Affordable, Reliable Digital Delivery of High-Quality Rich Media Content**

When IFILM, a leading video-entertainment destination on the Web, began its search for an affordable digital delivery network, they knew they needed a provider that could deliver their rich media files without sacrificing the quality their customers demanded. As soon as IFILM discovered the performance and scalability of Limelight Networks, there was no need to look any further.

IFILM customers receive short films, movie clips, music videos, commercials, and more delivered to their PCs quickly, efficiently, and—most important—reliably. Limelight Networks' proven capabilities not only meet their daily customer demand but they have also helped IFILM deliver popular content such as the 15 million Super Bowl commercials in the first 72 hours following the game, seamlessly.

"Limelight Networks has handled the IFILM traffic without a hitch," says IFILM executive vice president Blair Harrison. "Millions of users watching almost a million streams per hour, something we could have only dreamt of without the help of Limelight."

by

**Nathan Raciborski**

Chief Network Architect  
Limelight Networks

build enough redundancy and intelligence into the network to handle the unexpected traffic spikes that are commonplace today with breaking news or popular entertainment events.

**Reliability and Flexibility**

A DDN must have a track record with respected online properties and experience with multiple types of content such as live or on-demand video and audio, streaming, and downloads. Content providers should look for a delivery architecture that utilizes multiple distribution locations around the globe to ensure their media is routed efficiently and reliably. With worldwide reach and connectivity, a DDN is more robust and reliable than a single-location hosting solution and will have greater buying power to expand the network as needed.

As demand for digital media accelerates, a DDN must deploy new services aimed at enabling content providers. Not all customers require the same delivery services; one size does not fit all. Look for a DDN that recognizes the need for individualized service with a platform built to support the unique characteristics of the content provider—not their packaged offerings. Limelight Networks has a combination of “edge” delivery solutions, world-class data-centers and a sophisticated “Tier1+” bandwidth offering blending multiple IP backbones with a private fiber network. This suite of services gives clients a wide-range of distribution options to match their business models and budgets.

**Innovation**

DDN providers must be forward-thinking and focused on creating tools that complement the physical network. Example: Forecasting the need for greater ease-of-use in the legal music download space led Limelight Networks to develop a patent-pending technology—BulkGet Media Accelerator. BulkGet offers Limelight Networks music clients the ability to support easy distribution and organization of media files, providing consumers with multiple song tracks in just a single click; thus simplifying the online buying



process. Clients distributing heavy files such as video, and software products or updates also benefit from this innovation today, as it assists in giving consumers the easiest way to download and manage digital media.

As demand continues to grow for online

entertainment and communications—movies, games, music or meetings—Limelight Networks is poised to lead the way with a DDN platform designed to give audiences the best possible experience and content providers the ability to maximize their digital potential.



**Nathan Raciborski** is the chief network architect for Limelight Networks, a leading end-to-end Digital Delivery Network headquartered in Tempe, Ariz. Under Raciborski's leadership, Limelight Networks is a pioneer in developing innovative technologies aimed at enhancing the affordable online delivery of large digital files such as movies, games and music. Previously, Raciborski was a founder and technology architect of leading hosting and delivery organizations such as GlobalCenter, Entera, and Aerocast.

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