

## Media Delivery Trends with Akamai CTO Mike Afergan

*Edited transcript of BriefingsDirect™ podcast with Dana Gardner, recorded Nov. 7, 2006.*

**Dana Gardner:** Hi, this is Dana Gardner, principal analyst at Interarbor Solutions and you're listening to BriefingsDirect. Today a discussion around the massive shift on the Internet to media delivery. There has been an explosion in user-generated content, in media and entertainment companies, as well as vendors of software and software services companies delivering client packages—an increase in the entire software eco-system.

Mike Afergan is here to help us sort through some of the issues inherent in this avalanche of content—data packets—crossing the Internet. Mike is a chief technology officer at Akamai Technologies. Welcome to the show, Mike.

**Mike Afergan:** Thanks, Dana.

**Gardner:** We are seeing a different type of content distribution need. As a technology organization that is been working for a number of years at managing this—both for end-user benefits as well as for those distributing content—can you help us understand what is different now at the end of 2006 in terms of content, large files, and objects? What is different from just a few years ago?

**Afergan:** Sure, that is a great question. We've definitely seen a dramatic transformation over the past several years in terms of what our consumers—you and I and, of course, businesses—are doing daily online. Certainly, within the past year or two we had an inflection point in terms of adoption.

A number of different things are driving that. On one hand, you have a number of technology trends. Certainly one of the most significant is broadband adoption, both in the number of households and businesses that are connected online through broadband on a daily basis, as well as in terms of what broadband means to people today.

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Business approaches to using this content has powerfully transformed sites from merely a Web site to an online extension of their regular business—if not an online business in itself. For example, in the media space we see several businesses formed around pay-per-content models, ad-supporting models, and syndication models. In the software space we see companies using the online channel as a primary way to deliver their content. The technology challenges get really exciting with the companies that have real online businesses and are enabling that business online.

**Gardner:** I suppose it was no surprise to forecast five or 10 years ago that we would be in the broadband world. People expected that you were going to give more broadband to more homes and businesses. But I guess what wasn't anticipated were these new social phenomena in business models. I'm thinking about Web 2.0 companies, social networking, and people sharing massive files, their photos, and high-definition video clips.

Is this where we have caught the businesses by surprise?

**Afergan:** It caught some people by surprise. Obviously, a few years ago we saw broadband adoption happening at an accelerated rate. Nobody could predict the exact date we would hit that inflection point or exactly how fast it was going to happen. But certainly people saw that it was definitely happening over time, and the question was exactly which model, exactly which approach, exactly which pieces of new technology would really help it to hit that inflection point? Those certainly are the questions we are just beginning to uncover today.

There are many companies with successful online businesses today. For example, there are premium brand websites where you can get an online subscription. There is the CBS March Madness [basketball series], which has an ad-supported base model and had 400,000 simultaneous video streams. But truthfully many companies are still trying to figure out what the most profitable and successful model is going to be.

Take, for example, syndication, which is a very hot topic right now. This is an area where the business models and technologies are still sorting themselves out. So there are constant surprises and a constant evolution here. That is what keeps this exciting, and very interesting—and explosive.

**Gardner:** We are seeing the page-view model with advertising being increasingly important. We're seeing folks like Apple pioneering with a direct sales model with iTunes for music, where you just buy content via a download of a song—and increasingly movies, video, and television.

We are expecting more of that from Microsoft with its Xbox and Media Center. What are the technology requirements now that we are into these different content-delivery business models? I suppose what is common is that more bits are coming down the pipe. Is this an issue of scale? Is it an issue of measuring revenue? Is it an issue of cutting costs? Is there a need for better metrics? What are the technical requirements that are different now from what we forecast just a few years ago?

**Afergan:** Fortunately and unfortunately it is all of the above. There are many different challenges to realizing online businesses. I talked about pay-for content, for example, or ad-supported content or syndication. The business models themselves are complicated. Realizing them requires overcoming several technical obstacles.

Take, for example, a site like Major League Baseball. There are many challenges, as in any site that wants to have an online pay-per-content model where you are logging in to a subscription. The challenge is to make sure that only the people who pay for the content receive the content.

You need to worry about making sure that certain games are going to be blacked out in certain geographies. You are going to need to worry about controlling and having a rich interactive dynamic website. So there are many challenges around the business applications and logic, let alone the reporting and the monitoring and understanding your traffic, as well as the user events that happen at your site after the events.

Delivery is obviously a big challenge. Another is: How do you deliver the increasingly high-definition video streams, asynchronous transactions, and lots of small images on a user-generated site? How do you deliver all of this content in a reliable, scalable way?

These companies are evolving; they are facing many challenges, both fortunately and unfortunately, in a number of different areas. The real key theme is the logic and the tools it takes to enable that online business and the sophisticated business logic required to have such an online business.

A large part of that is making sure you have the rich interactive high-quality experience for your user because, ultimately, that is what makes it engaging, what makes people come back to your site and makes people click on more pages, more ads, more video, and more information. At the end of the day, that is what allows you to have your online business.

Doing that on the Internet has many challenges. How do you distribute that information through the Internet, which isn't designed fundamentally to handle the notion of a TV broadcast? You can't show up at a data center and say, "Hi, I'd like to buy 50GB a second of traffic," let alone thousands of gigabytes a second of traffic.

That does not work, and is not how the Internet was designed. A large part of what we do for our customers at Akamai is to not only give them the tools that enable sophisticated online business logic to do the targeting and the rights management, but also to provide the underlying platform that allows them to do scalable content distribution, which really is impossible using the bare metal of the Internet.

**Gardner:** One of the other associated trends here is that more and more types of organizations are becoming publishers. Companies and even individuals are becoming media distribution originators. We now have what is known as micromedia companies.

We now have everything from an individual to a Fortune 500 company getting into the act of creating content, distributing content, having a direct relationship either with their other businesses, ecology partners, or end users or other businesses as clients and customers. They do not want to get into the business of inventing the wheel once again for this sort of network services-level activity.

So it certainly sounds like a need for a de facto standard for a platform on the network for doing this?

**Afergan:** That is definitely a legitimate concern because the other problem that you did not mention is that while they are doing it, all of their competitors are also trying to do that and be more innovative. So our customers come to us to focus on what makes them innovative with their business model. They are looking for a platform that allows them to do that—not building on the bare metal of the Internet but delivering more functionality with a platform that allows them to worry about enhancing business logic, new partnerships, and so on.

There are a couple of trends here. One is the disassembly of websites. We have many sites that are now syndicating their content out, allowing their videos to be delivered on other video sites, allowing their content to be incorporated in other sites. And to do that requires a couple of different pieces. One is the ability to deliver that content, and another is to have sophisticated business logic that allows you to determine who, what, where, and when your content is available. A lot of customers turn to Akamai for that increase in business logic and personalization that runs on top of our platform.

The other area you touched upon—user-generated content—is a massive concern for many customers. The customer needs to have rapid affinity to your site. We see that for the social networkers as well as the brands now trying to incorporate community aspects into their site.

In the past year Akamai has not just enabled the delivery of content from our storage to our servers and to the end users. More and more for our customers we are also handling the upload of end users' content through the Akamai end servers to our storage environment. That allows companies to build explosive, innovative, and interesting new business models without building any infrastructure. The customer wants us to worry not only about the content delivery and what is updated on their site. They also, frankly, want us to manage the content aggregation from the user-generated perspective.

**Gardner:** I see. So they not only need to worry about everyone simultaneously hitting on their servers to get a download, but as a media company they need to start attracting entertainment, as a social networking company, and so they need to think about everybody showing up at their door at the same time with a 5GB video file, right?

**Afergan:** Yes, so you need to worry about content heading in both directions. Frankly just the sheer scale of it—the amount of people coming to you to deliver content, the size of your library and how that grows, and how much content you are going to need to worry about, manage, and control.

**Gardner:** You mentioned that we are not just talking about the movement or the management of these files; we are really talking about managing the relationships. We are talking about federating this content, aggregating it, deciding who can see it and under which circumstances, and what is freely available.

This involves a platform of some kind for gathering metrics, a billing or a transactional platform of some sort. And that becomes a logic issue, not just an infrastructure issue.

**Afergan:** Exactly. For more and more of our customers it is about enabling their online businesses. They are coming to Akamai to acquire those tools and logic. With our system any customer gains a configuration that basically specifies their requests, how we handle, how we process, and what logic we run for those various transactions.

Those are the tools that we built up over the years. We essentially provide applications for our customers to build on. It is not enough to simply have content in your site or to put content on other folks' sites. You need to worry about your authentication system, your advertising targeting system, as well as your reporting system. And that is what Akamai is doing for our customers.

An example is in the media space and the commerce space, where there is much more content going around—but also much more business logic wrapping around that content.

**Gardner:** When we think about business logic, we usually think about developers. I suppose there is another trend afoot in the marketplace around accessing applications as services, something we call SOA and Web services, and also seeking out infrastructure as services, or services oriented infrastructure (SOI). There are a host of things going on there with virtualization and grid and utility.

Now, without going down that particular grid avenue at this time, what do we have here for developers? Should they be thinking about these issues or should they be going for services that they can access and integrate into their logic that provides a business model, an innovation, for their businesses or their hosting organization?

**Afergan:** Services are a powerful paradigm and tool that companies and developers can use to develop extensible applications. All the things that I spoke about before in terms of syndicating content and replacing functionality to other sites are generally available through an API-like interface, some sort of SOA.

These architectures are interesting and challenging because they typically flow over the Web, and small connections exchange these pieces of information when there is a request. That is a very challenging type of workload for a Web infrastructure—where you have packet loss and increased latency, etc.

That information is exposed to different sites through APIs and various SOA or other XML-based or HTTP-type interfaces. So certainly the notion of exposing more of a service is something we are likely to see much more of over the coming years.

Of course, over the public Internet these services definitely have a lot of small HTTP connections, which means that they are chatty and do have to deal with the fragility that is exposed via TCP. There is a challenge from a quality of service perspective that needs to be overcome, but at the same time it does provide for a great deal of functional flexibility.

**Gardner:** So you need to build an attractive platform of services to address the new business models. And there is also an increasing set of developers using rich applications, AJAX front ends, or who are looking at SOA. Should we expect something from Akamai with a bit more interest to developers?

**Afergan:** We certainly hope that our service offerings today are very interesting to developers. Our approach has been, and will continue to be, to service the needs of our business customers. Akamai will not be offering developer software per se, but I think you will see us offering functionality that is important for the more sophisticated applications of our customers.

We will also be offering tools and ways for the developers within our customers to better interface with Akamai. At the same time, part of our approach is to be transparent, behind the scenes. We want to allow the customer to write Web services that are most natural for their business, and then allow it to run over the Internet without concern about the Internet quality-of-service, the vagaries of TCP, or what networks are now connected to.

Essentially all they do is make one small change in DNS, work with us to make sure they're happy with their configuration, and then write the applications just the way they want to.

**Gardner:** When your customers come to you is there a different technical dialog now than a few years ago? Do you have another level of technical capability that you are bringing to them?

I know you had a lot of software vendors, for example, who are customers, who wanted to distribute their software products, their patches, and updates and so forth over the Internet. You have met those needs, but you are probably dealing with a different type of company now. Tell me a little bit about this sort of technical problem and solution set that the market is demanding right now.

**Afergan:** Sure. Clearly our customers, just like Akamai, have evolved significantly over the past several years. One of the exciting things for us is to work with these customers on their future projects. So often we're in situations with our customers thinking about what they're going to be doing a year or even five years out from the current timeframe. It is exciting for us to see these trends and to hopefully be out in front of these trends by the time they actually are relevant and required as we build up trusted relationships across the industry.

Online businesses are really the key that is driving what our customers are building—not just putting content online, but putting sophisticated applications online. Our customers are asking us for the ability to have a high level of sophistication in their application, as well as high level of scale.

So not only are they coming to us asking us to move from 100K to 300K to 500K to 1.5MBit streams, but they want to make sure that when they do that, we are going to tie in with their J2EE applications, that in turn is tied into their user authentication system, which in turn is tied into their reporting system, which—by the way, also has to work with two or three other third-party technologies that they want to support as part of their infrastructure.

It is generally a much more sophisticated application and developer that we're working with. And what is great for both of us is that we are working with a more sophisticated business model.

**Gardner:** So you are much more of an ecology hub here, pulling a lot of different parts together to bring about a business solution.

**Afergan:** Often we won't be the one pulling all the parties together in terms of a business perspective; that is not our business approach. But often our professional service organization working with the customers will be interacting with the other third parties, and some are already customers of Akamai.

So from the technology perspective, many of those technologies are running on the Akamai platform and working with each other, with us, and with the customer.

**Gardner:** Maybe you could give us a sense, Mike, of some of the return on investment (ROI) or some of the other metrics of success here. When we are dealing with such vast amounts of content, and people in the business are shifting as they evaluate different approaches to this, what would you tell them is in their best interest in terms of the cost and capability?

**Afergan:** Sure. We have been able to develop support across a variety of different business models, and have seen many different successes. For example, in the media a well-known Akamai customer such as Apple iTunes fundamentally changed the music landscape. It has over a billion downloads of music, similar to a pay-per-view content approach.

Another example is Major League Baseball. We support over 250 live games per month during the baseball season, with a variety of subscription-based approaches.

Another case is Akamai customer Friendster, in the social networking space. By coming onto the Akamai platform, not only do they save infrastructure cost but they were able to triple their market share in terms of page views—which in the advertising space, in the social networking world, that immediately translates into revenue for them, with more and more page views.

A great high-tech example is Microsoft who, for their beta release of the Windows Vista software release, did more than 80GB per second of traffic—one of the largest sustained volumes in the history of the Internet. They were able to run on the Akamai platform without thinking about building out new infrastructure, etc.

So many of our customers come to us and see significant cost savings and bottom line savings. But increasingly our customers are also seeing increased top-line revenue as well through better performance, reliability and scalability.

**Gardner:** I suppose in this changing landscape people are also interested in risk reduction. I might be in a pay-per-view model today, and I might want to move to a subscription model tomorrow. I probably want to continue advertising. And then there is this whole notion of syndication. How can I position myself to move among these different revenue models from the same sort of platform or infrastructure perspective?

**Afergan:** Exactly. I mean many of these customers want to have the flexibility and agility to expand really different business models, to be able to move and incorporate different types. Akamai takes that issue off the table in savings, which gives them the time and the money to invest elsewhere in their business.

With the tools and functionality in our platform, we allow them to shift between the models that you've mentioned. Their user model within their applications is supported by Akamai and can support authentication if they want to have a pay-per-view content mode—or targeting, if they decide later they want to do advertising. And, frankly, we have some customers who want to do free trials, too, so moving back and forth between the different models.

So flexibility and agility is fundamental to survival and success in the current exciting, rapidly changing marketplace. What it comes down to for our customers is to have a platform they can build on, both for their application logic and for their content delivery—one that is not the bare-metal of the Internet. And that is why customers are using Akamai.

**Gardner:** Very good, thank you for explaining so much. This is clearly a changing landscape, so we will revisit some of these issues, I'm sure.

We have been talking today with Mike Afergan, the Akamai chief technology officer. And Akamai is the sponsor of our podcast today.

We've been discussing the explosion of content and media on the Internet, and how network services and shifting business models are requiring a richer set of capabilities from providers like Akamai. Thank you very much for joining us, Mike.

**Afergan:** Thank you, Dana.

**Gardner:** This is Dana Gardner, principal analyst at Interarbor Solutions, and you have been listening to a BriefingsDirect podcast. Thanks for listening.

Podcast sponsor: Akamai Technologies.

Transcript of Dana Gardner's BriefingsDirect podcast on Internet media delivery platforms.

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