AKAMAI SLIPS IN STREAMING, EXCELS IN STATIC CONTENT
(AAPL, AKAM, AMZN, CMCSA, CSCO, GOOG, LLNW, LVLT, MSFT, NFLX, T)

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BACKGROUND/DESCRIPTION

▶ With more streaming video content watched daily, content delivery networks like Akamai Technologies Inc. (AKAM), Limelight Networks Inc. (LLNW) and Level 3 Communications Inc. (LVLT) are expected to benefit. Akamai is the market leader, though Level 3 and Limelight recently won or extended a contract to deliver streaming content for Netflix Inc (NFLX) at Akamai's expense. This report aims to measure up the big three providers, to determine if Akamai is losing share to upstart competitors, and to assess the likely winner of streaming content as the market continues to expand.

RESEARCH QUESTION

▶ **What do the recent Netflix-related wins for Limelight and Level 3 mean for Akamai? Who will benefit most from the expanding streaming video content market?**

INITIAL FINDINGS

▶ **Akamai is not as strong as its content delivery network (CDN) competitors in the delivery of streaming video, according to customers and network engineers. This competition has forced Akamai to reduce its prices.**

▶ **Netflix's decision to reduce its reliance on Akamai is highly visible but not yet overly significant. Still, sources said Akamai should view the situation as a wake-up call and a future problem should other customers follow Netflix's lead. Two sources believe Akamai's struggles with Netflix are based on poor performance rather than price.**

▶ **Akamai remains the overall leader in value-added software for static content and application delivery. It also excels in reaching more remote areas than its competitors.**

▶ **CDN services for mobile devices are an emerging market. Limelight and Akamai are the main companies developing in this area.**

▶ **Amazon.com Inc. (AMZN) is emerging as a leader in offering CDN in the cloud. Three sources said the company could disrupt the industry within a year or two.**

DATA

Silos: Content distribution network customers (3), network engineers (4), and CDN industry experts (5)
Additional Sources: Industry publications (7) and blog (1)

SILOS

CDN Customers

▶ **IT manager for a customer that chose Limelight over Akamai**
This source said Limelight charges almost half of Akamai's fees and that its infrastructure, which is built around fewer larger data centers, offers better performance in larger data transfers like streaming video. Akamai's advantage is in serving remote areas. He is paying attention to Microsoft Corp.'s (MSFT) and Amazon's CDN offerings since he believes CDN is becoming a commoditized service in the cloud. Also, cloud CDN offerings allow near-instant implementation of CDN services versus traditional CDN providers.

- "Akamai had better software and better interfaces, but they were billing us for every service. Limelight does have less visibility and is less flexible but is significantly cheaper. Akamai will probably give you better performance than Limelight but not that much. The performance difference in Europe and the U.S. is almost negligible. Akamai has an edge in places that are more remote. If you want access to Russia or New Zealand or South America, you are better off with Akamai. You can go with Limelight and have similar performance in the U.S. and Europe."

- "We've used Limelight for static content since 2006. We did some expensive dry runs with Akamai but didn't take the service because of pricing."

- "In 2008 we did extensive tests comparing Akamai with Limelight in terms of downloading of applications. We tested a million downloads and measured completion rates and conversion rates. Generally, Akamai downloads were 3% faster than Limelight, and our conversion rates on Akamai were 1.5% better. With that small margin of difference in performance, Akamai's price was twice what Limelight was charging."

> *Akamai had better software and better interfaces, but they were billing us for every service. Limelight does have less visibility and is less flexible but is significantly cheaper. Akamai will probably give you better performance than Limelight but not that much. The performance difference in Europe and the U.S. is almost negligible.*
>
> *IT manager for CDN Customer*

- "The difference between Limelight and Akamai has to do with implementation. Limelight has a large computing epicenter and 20 locations. Akamai has many smaller point of presence. Limelight can better cache because their capacity at each point of presence. With Akamai, stuff was getting expired from the cache because their capacity at each is lower despite having more points of presence."

- "Limelight allows you to run your own code on their service, but Akamai has limitations that confine you to their platforms. Limelight has a custom CDN offering that provides service in their own data center. That was exactly what we are looking for. We have our own CDN within Limelight's CDN. I haven't seen this solution with any other providers, especially with for us with 65% of users in Europe and the rest in North America. Limelight could provide that at the right price."

- "Akamai's management interface is one thing that no other CDN has. The ability to make changes through their interface and then deploy within our own system is astonishing. With Limelight, if you want to set up a new host name or CDN settings, you generally need to go to your account manager. There is some interface that allows requests, but those are still done manually with the technical team at Limelight. You can forget about deploying changes in three hours. But with Akamai, it's automated. That's a big plus with Akamai."

- "Limelight's large data centers are better suited for the new sizes and volumes of data being transferred."

- "I definitely understand Netflix's decision. Netflix's population is in the U.S. They're not trying to reach non-U.S. customers. Because of copyright issues, they've got a U.S. population, and all the CDNs are equally good there. There are no performance benefits in the U.S. markets among CDNs. Akamai couldn't provide them with the cheapest solution."

- "Akamai has multiple nodes with lower capacity. For streaming video you need a lot of capacity at each location or your content will expire too early. Then you're just passing on the problem to the originator and the CDN isn't helping the speed of delivery. I'm not sure Akamai can do large library like what Netflix has. Netflix isn't the best use case for Akamai's network. Level 3's infrastructure is closer to Limelight than to Akamai."

- "Limelight's model is well situated in Europe and good enough for the U.S. If their maintenance centers are lower, their costs of deployment are much lower. It's a centralized infrastructure. The only incentive to use Akamai is in regions without good coverage. There's also an Israeli company called Cotendo [Inc.] that Akamai should pay attention to. They have good CDN software. They are deploying worldwide. They have capabilities of Akamai at much lower prices. I met with them when they were small. They had interesting ideas. They're competing on services. They're younger."

- "I see a trend where people go to the cheap CDN to cover populated areas like the U.S. and Europe and if they have to get to remote places, they send the user to Akamai. People are having more than

one CDN and taking advantage of different price points."

- "Limelight is very competitive with their static CDNs and their custom CDNs, like the one we're using. If they just could just get their marketing problems worked out, they'd do better. Recently, their customer care has been better. They've visited us and other important customers. It's really making progress on that level."

- "Another trend in the CDN business is that cloud offerings make it easy to use a CDN. At Amazon, you can utilize their cloud offering within a few minutes and you can use their CDN. But if you go to Limelight or Akamai it's a months-long process. Amazon has their own deployment, and it's quite good. It's growing on a daily basis. Cloud makes it easy for business to use a CDN."

- "Amazon is not as well-deployed as Akamai and Limelight, but at some point we'll see the performance of Amazon CDN similar to Limelight and Akamai. The cloud platforms are all offering CDNs now. The capacity isn't there yet. Microsoft is interested as well. With Microsoft's CDN as well you don't have a huge commitment and it is price competitive for small and midsized business. It's getting commoditized in the cloud."

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> *IT manager for CDN Customer*

- "We wouldn't go to Amazon because of our relationship with Limelight, but if I had a start-up today, I'd go with an Amazon CDN. Going with Limelight or Akamai will take one to three months, and a start-up needs it working within days. In a year or two, you're going to see all the enterprise features in the basic Amazon offerings with no contracts. Just pay with your credit."

- "In terms of cable, it doesn't take a lot to get into the CDN business. Everyone with some modest investment in the right people can set up a CDN. Is it worth it? The business could become saturated, and it's not healthy. In the U.S. there are so many players that cannot differentiate themselves so they start differentiating on price, which leads to bad service or bankruptcy."

- "Verizon [Communications Inc./VZ] is talking with Google [Inc./GOOG] about some kind of deal to force the large content providers to pay Verizon for its network. They want to charge the large content providers. If net neutrality ends, then cable providers make sense because you're negotiating with your ISP anyways. But it wouldn't make sense in Europe where you have public exchange points. In the U.S. it'll need to be stopped by the FCC."

▶ **Head of the Web performance group for a major TV network**
This source said both Akamai and Level 3 are legacy relationships for her enterprise. Level 3 has excelled at very bandwidth-intensive video traffic, while Akamai remains dominant for non-video text and graphics content. She characterized their difference as a matter of pricing and performance.

- "We've always used Level 3 for video and Akamai for the non-video Web content. This goes back from before my time, so we are talking mid-'90s here or earlier. We will probably keep the exact same vendor relationships for the foreseeable future."

- "Akamai is actually a lower-cost vendor than Level 3 for the basic non-video traffic, which is why we use them for that and will probably continue to do so. But Akamai charges substantially more for video and has a much less mature offering where video is concerned. I'm not saying Akamai's video delivery is bad, only that they developed it fairly late and now charge a premium for it."

> *We've always used Level 3 for video and Akamai for the non-video Web content. ... Akamai charges substantially more for video and has a much less mature offering where video is concerned. ... I'm not sure Akamai was ever a serious competitor in video. But the rest of their business seems as healthy as ever.*
>
> *Head of Web performance group for CDN Customer*

- "Level 3 has always been the way we move very large files around the internal network. It's more

expensive on a per-bit basis, but still cheaper than the Akamai video pricing. So we use Level 3 for our video and route everything else to Akamai. Overall performance is fine."

- "We were early in the high-bandwidth distribution because we needed to upload and download large video files for internal use—for processing, broadcast and storage—and then for very limited Web delivery. Akamai handled the bulk of our Web traffic, but we made exceptions for the video because there were performance issues. Now Akamai supports video, but the price issue keeps us on Level 3."
- "I'm not sure Akamai was ever a serious competitor in video. But the rest of their business seems as healthy as ever."

▶ **Vice president of engineering for an Akamai customer**

This source's experience with Akamai has been positive, resulting in better performance and data delivery for end users. He said Akamai's current emphasis is toward providing solutions to increase transfer speeds to mobile devices.

- "We wanted to have a trusted name in the space, and Akamai certainly is that. We don't do any video streaming. We're traditional Web applications. Our decision was twofold: We liked their presence out on the edge, the sheer number of data centers, as well as their SureRoute concept. It allows traffic on their network to be routed in the most efficient matter, and for it to be reliable since they see so much of the Internet's traffic."

> *We're very pleased with that investment. Our service has been good. ... We've seen a decrease in that roundtrip time by adding Akamai.*
>
> *VP of Engineering for Akamai Customer*

- "We didn't look at any competitors in depth. When we went with them, the prevailing recommendation was that they were the top of the food chain. We made the decision about a year and a half ago. We were willing to spend for what we felt were the important aspects. All our interactions have been good."
- "We're very pleased with that investment. Our service has been good. We measure what we call 'roundtrip time' for our transactions, and we've seen a decrease in that roundtrip time by adding Akamai."
- "We did a pretty significant performance initiative. CDN wasn't the only factor, but it was a big component. Our customer stat has really improved based on that initiative."
- "If you want to control performance and deliver the best user experience, you need CDN. We use it to differentiate ourselves from competitors. We're a medium-sized company, and we're the leader in our space. The vast majority for us is the U.S. market, but our presence is also worldwide due to outsourcing."
- "We certainly had to make sure Akamai could work for us. Speed is obviously great; the content is getting delivered. But if we need an update out there and it takes a long time to get out there, that would have been a deal breaker. Akamai meets our needs."

> *Mobile is a big play. Akamai is pitching the mobile solution. Akamai has made an acquisition with a product that will process the stream off a Web site and convert on the fly to mobile.*
>
> *VP of Engineering for Akamai customer*

- "We're also adding new monitoring systems for traffic that passively sniffs, and there's integration between that and the Akamai API, which we're looking at. Exposure via an API into their data is something we're very intrigued with."
- "Mobile is a big play. Akamai is pitching the mobile solution. Akamai has made an acquisition with a product that will process the stream off a Web site and convert on the fly to mobile. Everyone is trying to make it easy to get content on mobile devices. Mobile devices are getting better at dealing with rich content without processing. It may become a nonissue."

Network Engineers

▶ **Network engineer for a large research institution**

This source was not optimistic about Akamai's long-term future. Large media entities already have been

migrating to Level 3—in conjunction with Limelight or separately—while the cloud is becoming a better proposition for even midmarket enterprise customers.

- "Their offering was never really all that relevant to video anyway. The really media-intensive enterprises like CNN always stayed with Level 3 for their video streams, even though Akamai emerged as a partner there to serve non-video dynamic content on the Web. The fact that Netflix went with Akamai in the first place was a bit of an aberration. I don't know whether Akamai sold them a sweet deal or what, but they should always have stayed a Level 3 account."
- "If anyone needs a deep [data] pipe, it's Netflix. Video is what they eat and drink, and they don't get paid if that video doesn't get served. Even if Level 3 is more expensive on a sheer bandwidth basis, if they're the only player in town that can support that kind of traffic, you've got to go with that player. So on those terms, if Akamai couldn't handle the traffic, it doesn't matter how sweet the deal was. That's probably why Netflix jumped several months into their relationship with Akamai."
- "I've seen $10 million to $15 million quoted as the scale of what this means to Akamai's bottom line. Naturally, this isn't a zero-sum trade for Netflix either. Most likely, Akamai loses a $10 million account, Level 3 gains a $15 million account and Netflix has to make up the difference. Since the performance issues are hard to account for, this shows up as a drain on Netflix."
- "This is not a company killer for Akamai in the short term. Netflix is a substantial single customer, but I doubt losing them really moves the needle for Akamai's overall business. They still serve content for almost all the midtier enterprises out there. But what this does is put a cap on their ability to compete, at least for now. They can't go after the CNNs and the Netflixes of the world. And as video becomes a bigger piece of the overall Web, it shuts Akamai out of a bigger and bigger piece of the market."

> *This is not a company killer for Akamai in the short term. … But what this does is put a cap on their ability to compete, at least for now. … As video becomes a bigger piece of the overall Web, it shuts Akamai out of a bigger and bigger piece of the market.*
>
> *Network Engineer, Large Research Institution*

- "If they built out a lot of infrastructure, they now need to either carry the CAPEX or offer a lot of sweetheart deals in order to monetize it relatively quickly. Sweetheart deals mean softer prices, and softer prices mean a race to the bottom in the midtier enterprise space. Great for Web video in the short term, but as the midtier players grow up into big streaming monsters, they'll grow out of Akamai's sweet spot even faster."
- "Limelight was always in the picture in the Netflix relationship, no matter who was handling the bulk of the traffic. Their stake in the Akamai loss is really only that their value-added service offering remains intact. The interesting thing is that Limelight and Level 3 are now preferred vendors for Hulu as well. This is another bit of evidence for the notion that Web video is growing beyond Akamai's ability to keep up."

▶ **Network engineer with experience in delivering video content in Web 1.0 and 2.0 environments**
This source considered Akamai the leading name in the CDN space for most applications but noted price concerns. He believes Level 3 is still too large a vendor for small or even midsized customers, much less start-up enterprises. He did not mention Limelight.

- "Akamai is the clear leader. Level 3 is good but won't talk to you if you're a small fish like we are."
- "Akamai does price like the leader if you don't have leverage. They know their position and take advantage of it."
- "There are some guys out there like Brightcove [Inc.], specifically for video, but they tend to be specialized for more sophisticated applications."
- "We are using Brightcove for video because we do not do much video, so it's more of an a la carte price for us. We use Akamai for basic CDN functions because they've established themselves over the years. A lot of people of my generation grew up working with Akamai."
- "For basic CDN I doubt Akamai is losing share anywhere. L3 is not moving down market to capture this business although they do seem to be winning very video-intensive accounts. The niche players are doing well but remain niche players."

▶ **Content management system developer, New York City media company**

This source said Akamai's competitive advantage is its value-added business in winning mass-market enterprise clients. He did not view Level 3 as a competitor, but recognized Limelight as a more serious threat.

- ▪ "Akamai has a huge advantage over Level 3 in the form of its software. All that value-added functionality is practically essential, but because relatively few people can—or want to—replicate it themselves, they need to either go to Akamai or Limelight. Level 3 is fairly useless on that front."

- ▪ "The thing to understand is that a CDN is an intricate and expensive proposition to build in-house. Even the old text-driven content management systems were million- or multimillion-dollar products just to buy from a third-party vendor, much less replicate with internal resources."

> **Akamai has a huge advantage over Level 3 in the form of its software. All that value-added functionality is practically essential, but because relatively few people can—or want to—replicate it themselves, they need to either go to Akamai or Limelight. Level 3 is fairly useless on that front.**
>
> *Content Management System Developer*

- ▪ "We do this in-house because content generation is our business, and that's the value we add. But anyone else—a Hulu, a Netflix—is really in the business of buying legacy content libraries and then the work of delivering that content is not really a core competency for them, so Level 3 works well. They just need a very simple back end and a big pipe. But if you're not us, Akamai gives you the content generation and management side."

- ▪ "Limelight has a lot of the content management software that Akamai provides, as their ongoing legal differences reveal. I would consider Akamai the gold standard there, but they know it and charge accordingly. I consider Limelight a little scrappier. Because what you're buying here is full-service value-added delivery, you probably don't want 'scrappy.' You want the best, even if it costs more."

▶ **Network developer who has built several CDN systems**

This source remains devoted to Akamai but admitted the company is facing video streaming competition from Limelight and Level 3.

- ▪ "Akamai is still the leader in cache content and application delivery although for streaming they are seeing competition from Limelight and Level 3."

- ▪ "They're not the only player in broadband video, but I personally think they'll be fine."

- ▪ "I'm not working with them right now, but I may change that. We simply don't have the content base to need them as yet."

Industry Experts

▶ **Dan Rayburn, executive vice president of StreamingMedia.com**

This source said competition has caused Akamai to cut prices for video delivery services—up to 75% for some customers in the past 18 months. The Netflix win is not a sudden coup for Limelight and Level 3; Netflix has been using Limelight for almost three years and also has used Level 3's delivery services. Akamai is still the largest CDN for video delivery. As the streaming video market expands, all stand to benefit equally. How each ends up, however, depends on business execution. He expects Amazon to disrupt the industry in the next few years.

- ▪ "Akamai is not in any danger of giving up the top spot. What everyone should be watching is not how much share did competitors take but how much they reduced pricing in the market overall. Now, did they take 20% of Akamai's business? No, but they forced Akamai to reduce pricing 60% to 70% for video delivery."

> **The bottom line is that if any one CDN truly had better performance for video delivery, then vendors would put 100% of their traffic on that network.**
>
> *Executive VP of StreamingMedia.com*

- ▪ "[None will] say how many customers they have for a specific service like video delivery. In 2009, Akamai lost a lot of share of the video market because their price was too high, something we saw them combat with their lower pricing in the market."

- ▪ "Akamai has never been scared of the competition and, in many cases, has sued and then acquired

companies they felt might compete with them. But if you're Akamai, you have to be concerned about AT&T [Inc.'s/T] deal with Cotendo, which is probably why Akamai is now suing Cotendo over patent infringement."

- "Netflix is the largest [CDN] customer for video delivery services, but it costs them only about $40 million in 2010 to deliver all of that video. The entire CDN market this year specifically for video delivered globally is about $500 million, and that's why you don't see major carriers jumping into the business because the market is too small today."

- "All three have a reputation of being very similar in network quality, specific to video delivery. Netflix splits their traffic pretty evenly between Limelight and Level 3, and feels that they are so similar, they're using both. Other content owners like Apple [Inc./AAPL], Major League Baseball, Hulu and others use a combination of two or three of the leading CDN providers. The bottom line is that if any one CDN truly had better performance for video delivery, then vendors would put 100% of their traffic on that network."

> *Amazon is going to be competitive down the road, and they will disrupt the industry. They're competing more and more every year. Amazon doesn't get the majority of its revenue from CDN, so they can afford to build a product over several years. Limelight has to make its numbers every day.*
>
> *Executive VP of StreamingMedia.com*

- "All of the CDNs will benefit from the growing streaming market; they all win in the long run. They all benefit exactly the same, but their success/failure is based on the execution of their business."

- "Google is never going to compete with the Akamais of the world because it's not in the service business."

- "Amazon is going to be competitive down the road, and they will disrupt the industry. They're competing more and more every year. Amazon doesn't get the majority of its revenue from CDN, so they can afford to build a product over several years. Limelight has to make its numbers every day."

▶ **Editor of a streaming industry publication**

This source believes Akamai lost its Netflix contract due to quality and service issues instead of the more publicized price war. He said the loss is not a big deal for Akamai unless the issues are widespread and major customers start abandoning the company. Akamai is not known for stellar customer service while Limelight's service reputation has the others beat. Limelight also made a recent acquisition to add a video platform to its portfolio. The other CDNs would be smart to add more features and services to attract and keep customers since CDNs cannot live by gigabyte delivery alone. As the streaming video industry grows, it may see an interesting new player: telecom companies that already have the infrastructure and want to own the entire ecosystem.

- "Netflix moving some or all of their video to Limelight does hurt, but I don't imagine it's causing the folks at Akamai to panic. If more leave, then it's an issue."

- "CDNs can't win by price alone, or at least they can't survive on price alone. Performance and reliability are going to become more and more important."

- "Netflix was unhappy with quality and service issues with Akamai. I certainly won't go so far to say Akamai has problems with those things. But if customers are saying that and it becomes the word on the street, it will certainly affect Akamai."

- "I have heard comments about customer service not being as strong as with a smaller CDN. And it doesn't have to be a smaller CDN. Limelight is huge. Limelight has a better customer service reputation than Akamai."

- "Pricing is probably still the No. 1 factor in getting a new customer. But when it comes to renewing a contract, the other issues become more important."

- "It's probably more important to maintain the large customers for someone like Akamai then it is to go after new business. Obviously, the major players—the broadcasters, the networks—they're still increasing the amount of content delivery business they need, so you need to maintain those customers while they grow."

- "Small to medium businesses are not going directly to Akamai or Limelight. Most likely, they will go to an online video platform like Ooyala [Inc.], Brightcove and Kaltura [Inc.] because they want a

service that will help them get their video online—from building the player to creating the playlist. They will in turn buy the delivery/bandwidth from the content delivery market."

▪ "Limelight acquired Delve Networks, an OVP [online video platform], earlier this year. Now Limelight has its own online video platform in-house. I don't know if [adding features like OVP] has higher margins, but it's beneficial in terms of getting new business. If a CDN like Akamai could get Brightcove as an exclusive customer, that would be a huge win, and it would mean that Akamai wouldn't have to go after each of Brightcove's customers individually."

> *What's becoming more and more interesting is the way the telcos and carriers are moving into the CDN space, like AT&T. They're seeing that they've got the network and they already have the connection to the end user, the consumer.*
>
> *Editor, Streaming Industry Publication*

▪ "Globally, Akamai is still the biggest CDN. It seems like Akamai is still focusing on the network itself. To compete, Level 3 and Limelight will have to offer those other services. I don't know of any other acquisitions [pending], but that's the sort of buzz in the industry and where it's all headed."

▪ "What's becoming more and more interesting is the way the telcos and carriers are moving into the CDN space, like AT&T. They're seeing that they've got the network and they already have the connection to the end user, the consumer. They're asking themselves, particularly British Telecom[munications PLC], 'We've already got the end-to-end delivery to consumers, so why aren't we delivering like a traditional CDN?'"

▪ "It certainly takes the investment of flash-media and Windows-media streaming services, but they've already got the infrastructure. I think it's a matter of the telcos wanting to own the entire ecosystem rather than looking for an inexpensive way to increase margins. They want to own every aspect of what they deliver right down to the customer."

▶ **Technology journalist**
This source said the competition in the CDN market is less about cost per bit and more about software development. Best positioned are the companies that provide tailored software solutions to optimize video delivery over CDNs. Streaming video has not typically been Akamai's strength although it is transitioning. Cable operators are actively considering entry into the CDN market.

▪ "Limelight, Level 3 and Akamai all compete in the same way. The architectures for how they do delivery are vastly different, even though they're all offering a similar service. Netflix wouldn't want to choose one provider. Even though these folks are competing, the customer often wants to rely on more than one so there are typically two or more for a big customer."

▪ "Limelight is like Akamai in the same way you have FedEx and UPS, and they're both delivering packaging. There will be room for both. They're different areas of focus. It's also a hugely growing market."

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>
> *Technology Journalist*

▪ "Cable operators are dealing with the last mile portion of the network. Limelight is dealing with middle mile with its architecture. A lot of heads are trying to figure out what makes sense in terms of CDN. I'm not sure cable ops are going to compete against CDNs."

▪ "In the last six months CDN has become a huge topic in the cable industry. They're trying to figure out delivery networks that are optimized for video. Akamai made up CDNs that had until recently been all about Web pages and static objects, and video is a total different beast. Akamai's gotten into that game."

▪ "Limelight would never consider itself a low-margin provider. Akamai can definitely charge more because they were the first in the industry. It's not just about price. There's been ongoing price compression in cost per bit. That's just talking about transit. CDNs are layering software intelligence on top of transit that go into the quality of delivery that are more than just passing bits around.

Transit price and cost per bit are going down."

- "But cost per bit is not the sole thing folks are competing on anymore. For the few companies that have that base of transit at scale, there's greater opportunity to offer software based services on top as well. At some point the delivery gets bundled into some other service like the cloud that you don't even see. It's priced when you talk about bits, but now there's more than just the delivery. In software terms, there's an equivalent of the operating system."
- "Limelight has a lot of software editing to encoding and formatting to whatever mobile device is out there. If you go to Limelight for your mobile services, Limelight can set it up and transcode it for the best experience for any playback device."

▶ **Spiro Azkoul, former senior solutions architect for Akamai**
This source said Akamai should not have let the Netflix account slip, but he believes Netflix will return to the Akamai fold because Akamai offers customers various add-ons the competition does not—apps that speed up credit card transactions and offer customer tools. The transfer of Netflix powers will not greatly affect anyone, but will show that companies like Level 3 are still playing the price-war game, which cannot be won. As the video-streaming market grows, Akamai will benefit the most because it is prepared, innovative, and spending less effort on the increasingly lower-margin bandwidth business.

- "I don't think the Netflix news will affect anyone or anybody, especially Akamai. CDN is becoming a commodity because of declining bandwidth prices. Streaming is a pure bandwidth play for the bottom players. But a top player like Akamai is focused on the applications."

> *I have a lot of experience with Limelight. I don't think they come close to Akamai or have the vision to respond to some of the Akamai products that are being put out there.*
>
> *Former Senior Solutions Architect, Akamai*

- "With diminishing margins, CDNs had to come up with another way to make money to offer added value… like player optimization and Akamai's open video player. Akamai fought really hard as a major player. That's why they acquired Netli, which built an application accelerator to speed up how fast apps interact with Internet users. That's where Akamai's major focus is now. They're not playing the bandwidth game."
- "Nobody can really do CDN as effectively as Akamai because of two things Akamai has that no one else has: 70,000 servers around the world, and the acquisitions with Speedera and Netli. With Speedera, they really mastered the back-end customer application. … With Netli, they mastered product application acceleration. Nobody comes close to having the proprietary technology and network that Akamai has."
- "I have a lot of experience with Limelight. I don't think they come close to Akamai or have the vision to respond to some of the Akamai products that are being put out there."
- "As a name, it was not a good move on Akamai's part to let Netflix slip. … In terms of getting Netflix, you really have to understand that it's like a drop in the ocean of bandwidth. … I don't want to say they don't care. Akamai will get back Netflix in a year, trust me. They've survived every single crisis since the dot-com bust. They're constantly innovating. The other companies are not."
- "Level 3 is a single network. No matter how many servers they put in or how awesome their technology is, they're still going to have to go through other's connection points so it will be slower. … I think Netflix made a big mistake going with Level 3 because its service is going to suffer."

> *Akamai is trying to move away from CDN and calling themselves an ADN, for application delivery network.*
>
> *Former Senior Solutions Architect, Akamai*

- "Akamai is not going to compromise too much on pricing. These other guys bend over backwards to get a customer because they want to amass a customer list. Ultimately, and financially speaking, Level 3 is not going to benefit tremendously from Netflix."
- "The lesson for the CDN industry, as demonstrated by Akamai very skillfully, is try to build a business case behind customer behavior. Akamai is trying to move away from CDN and calling themselves an ADN, for application delivery network. The nature and consumption of traffic has changed over the years. If you want to keep up, you've got to change your portfolio, get a flash player, get into the

authentication game, and secure copyrighted streams. If you want to be the biggest, you want to have all of these added services that come on top of the core product."

- "Those smaller CDNs need to focus on this to succeed or they'll find themselves in a vicious circle they can't get out of the price war with no additional services to offer."
- "When I first started in the industry in 1997, the price of the MB was $2,500. That's for 1 MB per second of bandwidth. … It's under $6 a MB today. That's how bad this whole bandwidth commodity has been. Anyone that went to market just selling bandwidth had to readjust."
- "I don't think cable companies will ever get into CDN, and I think they shouldn't. Anyone who is a single network is not a good candidate to become a CDN. The whole concept is to be multi-home, multi-connected."
- "The other thing about Akamai is that it is a litigation beast. They've sued the hell out of Limelight. They sued the hell out of Speedera and then bought it. They're cornering the market technology-wise, and now they're building so much more on top of the basics."

▶ **President of a company helping content creators stream digital videos**
This source said Akamai is hurting after losing the Netflix account since it is not accustomed to losing business to competitors. He believes Akamai lost the Netflix account based on price, not network performance. All three CDNs struggle with the same issues: Getting video to major markets like New York City is easy, but performance becomes spotty in remote markets. Akamai has the biggest network and reaches the most fringe areas. Hence, Akamai is poised to remain the market's biggest player as the industry grows to include competition from Amazon and Cisco Systems Inc. (CSCO).

- "Akamai is very good performance-wise. But in major markets, all the CDNs are good at serving traffic to, say, New York. It's on the fringes that all the CDNs have problems. Akamai is delivering the harder-to-deliver traffic."
- "Some parts of the market, like content-connected devices, have grown 500% in terms of traffic levels. You're crazy if you don't play in the market, and Akamai will keep doing so."
- "At the time the Netflix announcement came out, Level 3 was looking for big news. They have a tremendous debt load from the buildout over the years. Media coverage overreached a bit and gave Level 3 a push and more credibility than it deserved. Akamai has tried to diffuse it."
- "Prices are always an important consideration, but in terms of absolute dollars the spread is getting close and closer among the top CDNs. Where Akamai was, say, $1 and Level 3 was at 50¢, that's a huge difference but now it's 1¢ to 3¢. For that, do you want to use the market leader with all the polish and tools? There are a lot of companies that will want to go with Akamai."
- "The recent announcement is that Level 3 moved to a lower price point to incentivize customers. That's just the game that has been going back and forth for years. Level 3 used to have all the traffic, and then Akamai came in and took it."
- "The companies growing the fastest right now are connected device companies, like Verizon, which sell products that connect you online. The consumer gets a connected app and usage goes through the roof. Netflix and Pandora [Media Inc.] are the winners on who's picking up a ton of traffic."
- "Consumers are not using the PC desktop for entertainment as much as they used to. The guys who are going to be the winners are those who have a very tight device strategy. Netflix is genius for getting on everything like [Microsoft's] Xbox and [Sony Corp.'s/SNE] PlayStation."
- "I already think there's a fourth competitor in the market. It varies by region, but in every single region, there's a strong local player."
- "Amazon has a cloud service that is getting very popular. Cisco is making acquisitions. Microsoft is doing a cloud. I see the market as more fragmented and not consolidating. Overall, I think we'll see a lot of robust players. It's very possible that some of these guys like Cisco can come in and become a very formidable player."

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>
> *President,*
> *Digital Video Streaming Company*

ADDITIONAL SOURCES

Industry Publications

▶ A Nov. 9 article on StreamingMedia.com provided details on Netflix's decision to leave Akamai for Level 3 and Limelight, related more to performance issues than price.
http://blog.streamingmedia.com/the_business_of_online_vi/2010/11/akamai-to-lose-netflix-as-a-customer-level-3-and-limelight-pick-up-the-business.html

- ▪ "At the beginning of this year, Akamai took the Netflix business away from Level 3 and become the primary CDN for Netflix with at least 51% of their video traffic. While it was a big win for Akamai at the time, it appears that it was short lived. Due to poor performance issues that Netflix has experienced with the Akamai network, Netflix now plans to move all of their 'video' traffic off Akamai in the coming months and will go back to only using Level 3 and Limelight."

- ▪ "Last week, on Limelight's Q3 earnings call, the company announced that Netflix had extended their contract with Limelight for another three years until the end of 2013. And while Level 3 did not mention any customer by name, they also said on their earnings call last week that part of their recent CAPEX spend was, '*in support of a large content customer CDN contract we just won in October,*' with Level 3 expecting to see revenue from that contract beginning to ramp in 2011."

- ▪ "In addition, Level 3 also put out a release saying that they added 1.65Tbps of capacity to their CDN network in Q3 and added five new network locations, not surprisingly, two of which were in Canada. Clearly a move by Level 3 to offer more support for Netflix's new streaming service in that region."

- ▪ "It is interesting to note that Netflix moved to Akamai for lower pricing, yet then didn't get the performance they wanted. It's another great example in the market that the CDN business is not just about the low cost leader, but rather good performance with reasonable pricing. Naturally, one of the things you have to wonder is why Netflix would have performance issues with Akamai, yet other video customers I speak to say they don't have any. It's hard to know exactly why that is, but part of it could

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>
> *StreamingMedia.com Article*

  simply be that Netflix has more video traffic going over CDNs than anyone else on the web, by far."

- ▪ "I know some are going to ask me what the value of Netflix's business is to Akamai and while I don't have exact numbers, it's in the $10M–$15M range (yearly). In addition to Level 3 picking up the Netflix business, Limelight also stands to get more of Netflix business in the New Year, as Limelight indicated on their earnings call, especially when it comes to Netflix expanding further out into the mobile space. And I heard at the Streaming Media West show last week that Netflix plans to release an Android app in the New Year, which would generate even more ridiculous growth for Netflix."

- ▪ "Another interesting point to note is that Limelight isn't spending any additional CAPEX to support the increase in Netflix traffic, but Level 3 said that they estimate they will spend $14M in CAPEX in Q4 just to support '*a large content customer*' and already spent $10M in Q3 for additional CDN capacity. That's $24M of CAPEX in two quarters for Level 3, just for their CDN business. That shows some of the differences in network capacity between Limelight and Level 3 and also gives you an idea at just how big of a customer Netflix really is."

▶ Dan Rayburn's Nov. 3 presentation showed significant expected growth of video as a percentage of the CDN industry and in revenues.
http://www.streamingmedia.com/conferences/west2010/presentations/SMWest-2010-CDN-Pricing.pdf

- ▪ Slide 3: 39% of total revenue in 2008 CDN market is video. 42.8% of total revenue in 2010 CDN market is video.

- ▪ Slide 4: Revenue from video content delivery networks is expected to be nearly $550 million in 2010 with projected growth to $1.85 billion in 2015.

- Slide 6: Pricing fell 40% for video delivery customers in 2009 with traffic growth at 30%. Pricing declined 25% in 2010. Traffic growth averaged 45% in 2010 making 2010 a good year for the CDNs.

▶ A Dec. 2 InvestmentU.com report claimed Netflix was responsible for launching an industry of streaming content video providers, and projected Level 3's recent win to be a boon for the company.
http://www.investmentu.com/2010/December/netflix-creates-multibillion-dollar-industry.html

  - "The company that crushed Blockbuster is about to take things to another level. Three levels, actually."
  - "A large chunk of Netflix's newest and most promising business will soon be in the hands of little-known Colorado tech company, Level 3 Communications**.**"
  - **"**News that Level 3, along with two much larger rivals, will stream online video content to millions of Netflix subscribers has triggered a big increase in trading volume on LVLT over the past few weeks. And this despite the fact that no pricing details have been released."
  - **"**At the moment, [Netflix] is hurriedly preparing for the transition from 'mostly DVD to mostly streaming.' And by working with Akamai, Limelight and now Level 3, it's protecting itself against slow load times and costly service outages."
  - "For Level 3—a communications company moving into the content delivery market—the contract is a game-changer. Having Netflix as a customer could open doors to other deals, thus raising its stake in this relatively young market."
  - "After all, the streaming business is booming. And not just for Netflix, but for others like Amazon and Hulu."
  - "Amazon's Video on Demand service is now available via TiVo DVRs, set-top boxes like Apple TV, and even smartphones. Its success has led the company to develop its own subscription-based service a la Netflix, which it will launch early next year."
  - "The much-younger Hulu is also offering monthly subscriptions for its Hulu Plus service. Monthly users of its free ad-supported service have grown from five million in 2008 to more than 30 million in October. For the whole of 2010, it predicts revenue of $240 million—a 122% increase over 2009."
  - "And as these companies build up their subscriber bases and media libraries, they need content delivery networks (CDN) like Level 3 to handle the dirty work."
  - "CDNs are responsible for the massive amounts of data sent to consumers' laptops, smartphones and PDAs—everything from eBooks to HD feature films. And as demand for digital media soars, the CDN industry is seeing exponential growth."
  - "In less than five years, annual revenue is expected to double. And that's based on current growth rates. If products like Apple TV and Google TV take off, the digital media push could explode even higher."
  - "On its own, Level 3 is well-positioned to snag a huge chunk of this business because its services are competitively priced, roughly half that of industry-leader, Akamai; it can invest heavily in boosting its speed and storage capacity, thanks to the money from the Netflix deal; t he company's network will soon double in size, making it the largest and fastest in the industry."

▶ A Dec. 21 Digital Media Wire article reported on a federal appeals court's decision that Limelight was not infringing on Akamai's patents.
http://www.dmwmedia.com/news/2010/12/21/federal-appeals-court-limelight-not-infringing-akamai-patents

  - "A federal appeals court has upheld a lower court's ruling that said Limelight Networks has not infringed upon fellow content delivery network Akamai Technologies' patents."
  - "Akamai first sued Limelight back in 2006, and in February 2008, a jury sided with Akamai and ordered Limelight to pay $45.5 million in damages."
  - "A federal court overturned this ruling in 2008, saying Limelight in fact had not infringed on Akamai's patents."
  - "The U.S. Court of Appeals for the Federal Circuit has now upheld that ruling."
  - "Akamai may now petition for a rehearing before the full appellate court, or appeal directly to the Supreme Court."

▶ A Dec. 3 StoneFoxCapital.com article discussed whether Limelight can become a co-leader with Akamai or if it will remain a second-tier product.

http://www.stonefoxcapital.com/2010/12/will-limelight-networks-finally-light.html

- "Limelight Networks has garnered a lot of attention lately as the Content Distribution Network providers have been front and center in the media whether with the Netflix deal with Level 3 or the Comcast dispute with LVLT. Not to mention that the CDN sector is hot based on higher demands for data on Internet whether via streaming videos from NFLX, mobile video or cloud storage."

- "The key … will be whether they become a co-leader in the CDN market or remain a second fiddle to Akamai. AKAM is the 800lb gorilla in this sector."

- "Tech has long had a history of 2nd tier companies being held on by the market just so that customers can use them as a negotiating tool or backup plans. It's never wise to be completely reliant on one vendor and hence whether its Advanced Micro Devices being the back-up plan for computer chips to Intel or numerous companies playing such a roll with Cisco those companies don't prosper. While INTC and CSCO reaped major profits, their competitors tended to stagnate and struggle to even make a profit. Typically these companies grab the scraps or the customers looking for the lowest cost provider. Hint, lowest cost providers don't typically make money in new fast growth areas."

- "Therefore, the recent expanded deal with Netflix and the deal with Groupon are very important to digest the income dynamics. LLNW's CEO has already clearly stated that customers like NFLX are loss leaders that allow them to build out the CDN network and provide an excellent service to smaller, profitable customers. So while those two recently deals were headline grabbers, they may not make shareholders money at least in the short term."

- "Still the market has huge promise and LLNW shows signs of gathering steam versus AKAM to potentially make a duopoly. LLNW is growing faster and nobody's interest is served best by letting AKAM dominate the market."

▶ A Dec. 6 ConsumerAffairs.com discussed the dispute between Level 3 and Comcast for delivery of streaming content that may result in usage fees to Level 3, which likely will be passed on to Comcast customers.
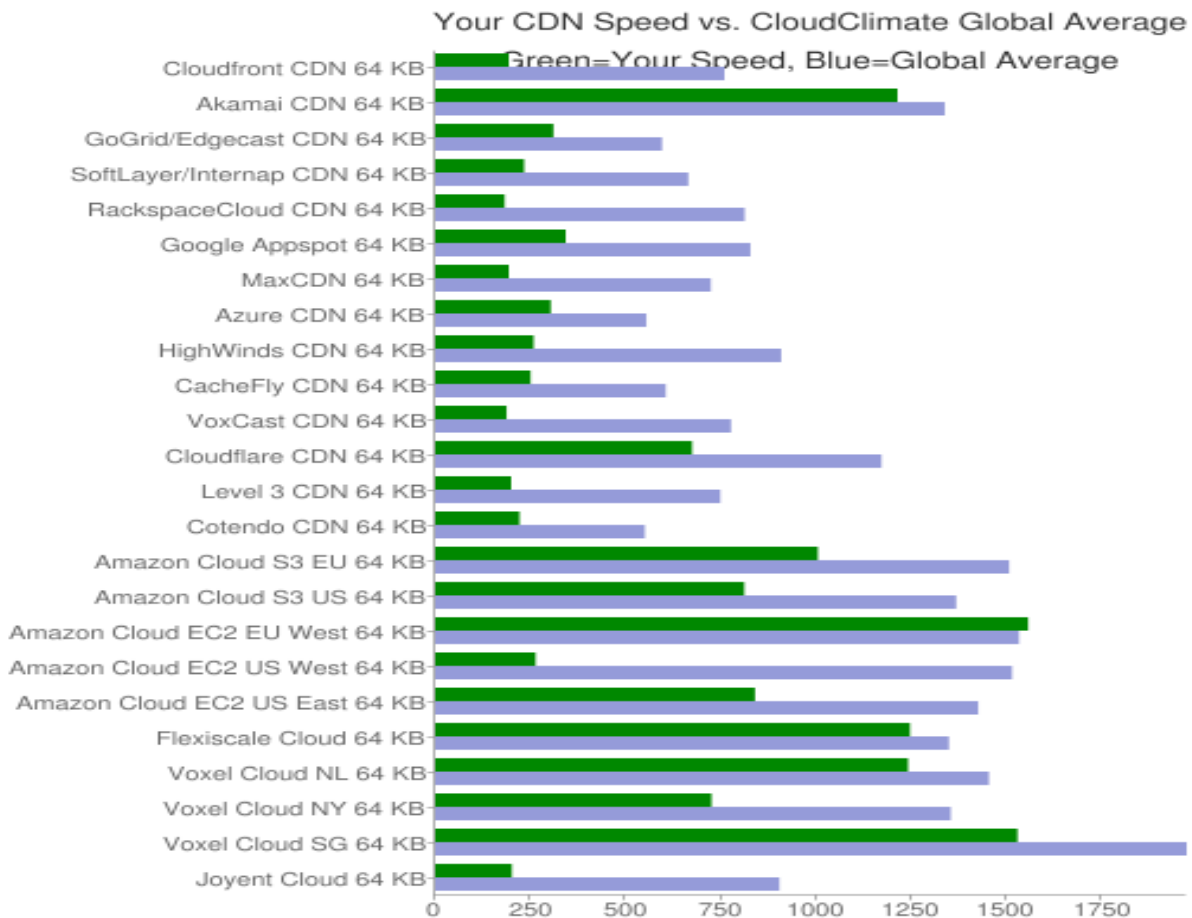*http://www.consumeraffairs.com/news04/2010/12/level-3-clarifies-position-on-comcast-fees.html*

- "In case there was any confusion about its position on Comcast's new fees, Level 3 Communications has issued another statement on the controversy."

- "The issue first surfaced last week when Level 3 complained that Comcast has announced its intention to levy ongoing fees for delivering content to Comcast, such as movies, that Comcast's subscribers have requested. Level 3 is a major supplier of streaming technology for NetFlix, which delivers video content via the Internet."

- "Comcast has countered that Level 3 is trying to gain an unfair advantage over competitors by using Comcast's network to deliver content without paying for it."

- "'Comcast's characterization could not be more misleading,' Level 3 said in a statement. 'What is truly at stake is whether consumers should have unfettered access to all the content on the Internet without regard to whether that content happens to be owned or packaged by Comcast.'"

- "Supporters of the concept of Net neutrality have seized on the controversy as an illustration of why the policy is needed. They say consumers will end up paying more for some content if network providers are able to discriminate among content providers. Opponents, on the other hand, say it perfectly illustrates why Net neutrality is unfair to network operators."

- "Level 3 says the disagreement is not a 'peering dispute', as Comcast has characterized it."

- "'At issue is a fundamental interconnection disagreement between Comcast, as a provider of local high speed Internet access to consumers who pay Comcast for access to content, and Level 3, which delivers content to residential broadband access providers like Comcast in response to consumer requests,' the company said."

- "Unlike 'peering' in the Internet backbone, where competition abounds and prices have been declining steadily, Level 3 said, Internet carriers that have content requested by Comcast subscribers have no choice but to exchange traffic with Comcast."

- "'Comcast is using this dominant position to demand payment for traffic delivered at its customers' requests. You simply cannot 'route around' Comcast to provide requested content to Comcast's subscribers,' Level 3 said."

- "Comcast says the fees it charges are commonplace and standard within the industry. Level 3 says that's not the case."

- "'No other broadband access provider in the U.S. is now charging Level 3 the type of fees that

Comcast is charging,' the company said. 'It is Comcast that seeks to change the common approach, changing the rules of the game in an unreasonable and discriminatory manner.'"

- "The controversy began last month with Netflix retained Level 3 to provide the bulk of the streaming services needed to send movies to subscribers. Level 3 asked Comcast and other Internet Service Providers to give it more access to their networks so they could handled the expected increase in traffic from Netflix."
- "When Level 3 asked Comcast for new interconnection ports to its network, it didn't expect to pay anything for that since it said it was providing content requested by Comcast customers. Comcast, while also sells video content to its subscribers, views it as unfair competition, and says paying a fee to deliver content over its network is reasonable."

▶ A Dec. 21 CDN performance test on CloudClimate.com showed Amazon's cloud offering as having the fastest download experience, followed by [Voxel](#) and then Akamai. Cloud solutions in general appear to be faster than CDNs, while Akamai outperformed all other CDNs. Level 3 was at the bottom in terms of download speed.
http://www.cloudclimate.com/cdn-speed-test/

Your CDN Speed vs. CloudClimate Global Average
Green=Your Speed, Blue=Global Average

Blog

▶ A Nov. 30 *Wall Street Journal* technology blog stated that Akamai has a new tracking technique that will not slow down the performance of Web pages.
http://blogs.wsj.com/digits/2010/11/30/a-new-type-of-tracking-akamais-pixel-free-technology/
- "Akamai Technologies Inc., the large Web infrastructure provider, is promoting a new tracking technique it calls 'pixel-free' technology."
- "Pixels are bits of software that tracking companies install on Web pages to monitor user behavior. These pixels, also known as 'beacons' and 'tags,' can install cookies—or small tracking files—on a

user's machine, or they can simply send information about a user 's behavior to a tracking company."

- "However, tracking has become so pervasive that some Web publishers are increasingly worried that the pixels on their pages are slowing down the performance of their site. Several companies have cropped up to help companies manage all the pixels on their pages."
- "Akamai's solution to the pixel problem is unique. Akamai's core business is to store copies of popular websites and applications on its computer servers around the world and speed delivery of this information. This content-delivery service allows websites to appear on visitors' screens faster than they would otherwise."
- "Because it stores copies of websites, Akamai has the potential to access 15% to 30% of total Web traffic. Two years ago, it began offering to track Web users' browsing activity for advertising purposes."
- "But instead of using pixels to monitor Web users as they move from page to page within a website, Akamai can simply view those users' movements directly. So it doesn't need to get pixels on every page."
- "'We can do that data collection because of the fact that we're doing site acceleration and content delivery,' says Perry Stoll, a senior manager of engineering in Akamai's advertising unit."
- "The company says its tracking is privacy-friendly because it installs an Akamai cookie on the computers of users it tracks. If a user deletes that cookie or blocks third-party cookies, Akamai says it no longer has the ability to track them. Akamai also offers an opt-out service; this installs a cookie on users' machines that tells Akamai not to collect data on their browsing habits."
- "Privacy advocates say companies like content-delivery networks and search providers have a lot of data at their fingertips that could be useful in advertising. Akamai 'has access to an astonishing amount of Web traffic' and thus could track many users, says Chris Jay Hoofnagle, director of the Berkeley Center for Law & Technology's information-privacy programs."
- "But Akamai says the information in its case belongs to the websites using its service, so it can't use the data unless its clients allow it. And advertising, Akamai says, is still only a small part of its business."

NEXT STEPS

In Blueshift's next report on content delivery networks, we will gauge the importance of the streaming video and HD market and Akamai's position. We will delve deeper into understanding commoditized streaming video and assess Akamai's attention to service-oriented offerings like interfaces and applications. We will pursue the development of CDN cloud offerings, particularly those from Amazon, as a potential disruptor to current options. We also will look at the role carriers will play in either partnering with video streamers over their networks or competing with them directly. We will monitor Limelight's and Akamai's attempts to increase performance for mobile devices. Finally, we will add a silo for software developers for their insight into the next steps of content delivery networks.