From: Gary Schare

Sent: Friday, January 18, 2002 5:45 PM

To: Bob Muglia, Chris Phillips

Cc: Bret O'Rourke; Joe Powell; Troy Batterberry; Rob Green

Subject: eCDNs and storage

Hi Bob and Chris,

I want to bring you up to date on some analysis currently underway in DMD to propose a strategy for the Enterprise Content Delivery Network (eCDN) market. We recently submitted a Think-Week paper (enclosed) that addresses the primary situation, threats, and opportunities in this market. Further conversations about this topic have made us realize that there is a very close affinity between eCDNs and storage solutions. This affinity is affirmed by the success that Network Appliance has had in selling eCDN solutions based on an attach strategy to their existing storage solutions. Essentially their message is "You already buy storage from us. Our eCDN products extend that storage out to the edge of your network where rich-media content can be more efficiently delivered to the end-user."

I think that after reading through this short paper (approx 4 pages) you'll want to become involved in the strategic discussions and possibly see that success in this market may be core to your own storage solutions strategy.

As a summary, here are some bullets from the paper.

Situation

- Digital media and rich-media (a combination of digital media and web content) is by far the most bandwidth intensive content carried across both commercial and private networks. It is the primary driver for content delivery solutions that: 1) speed the delivery of web content, 2) ensure an acceptable streaming media experience, and 3) significantly reduce the bandwidth load on the network backbone.

Strategic Threat

If Microsoft does not address the enterprise need for content delivery networks, it will:

- See large scale deployment of Linux-based caching appliances and servers that will also pull through or attach to Linux/Solaris-based content management, storage and Oracle database solutions.
- Risk losing our 69% Windows Media usage share in the enterprise to MPEG-4. CDN product vendors who now pay a royalty to Microsoft to license the Windows Media protocol on non-Windows platforms (our only revenue in the value chain.)
- Leave a significant portion of the eCDN value chain to other software vendors. Even if all eCDN vendors move to Windows servers today, it is the management/distribution application layer that commands the premium in the overall cost of the solution. Microsoft is not on a path to participate in this portion of the value chain.

Thanks in advance for your interest in this topic. Look forward to follow-on discussions.

As a side note, this topic came up in a Jimall review on ISA back in November. He asked us to come back with a

6/9/2003

Plaintiff's Exhibit

7062

Comes V. Microsoft
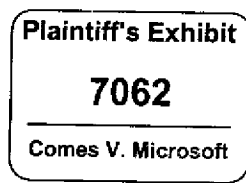
comprehensive analysis of the opportunities and threats. This work is underway but not yet scheduled with Jim.

Gary Schare
Director of Enterprise Marketing
Windows Digital Media Division

6/9/2003

Enterprise Content Delivery Networks (eCDN)
Future Impact for Microsoft
Final Draft 2.0

Executive Summary

Content Delivery Networks (CDNs) enable efficient and intelligently managed distribution of rich-media (digital media and web content) to the edge of both Enterprise and Commercial (cable/teleco) networks. Unlike the Commercial CDN market, the enterprise CDN (eCDN) market for products and services (forecast at $1.3 billion worldwide by 2005) is relatively unclaimed but is the new focus for server hardware/software vendors and service providers. Intense competition for the eCDN market and the lack of a managed content distribution strategy leave Microsoft vulnerable to being marginalized in this emerging and very strategic segment. By having no strategy, Microsoft abrogates server operating system market share to Linux and relinquishes incremental software revenue to vendors delivering the management intelligence software that is the premium in the CDN value chain. We also may lose our digital media format leadership if CDN vendors move to standard formats (such as MPEG-4) to avoid paying Microsoft a protocol royalty to serve Windows Media content from non-Windows platforms.

Microsoft should quickly assemble a team to evaluate the opportunities, options and trade-offs that lead to a clearly defined and actionable Microsoft CDN strategy

Situation

- Digital media and rich-media (a combination of digital media and web content) is by far the most bandwidth intensive content carried across both commercial and private networks. It is the primary driver for content delivery solutions that: 1) speed the delivery of web content, 2) ensure an acceptable streaming media experience, and 3) significantly reduce the bandwidth load on the network backbone.
- A Content Delivery Network (**CDN**) is a network of servers co-located in ISP or Cable/Teleco facilities, designed to intelligently cache and serve web content and streaming media content over the Internet, based on user request patterns.
- An Enterprise CDN (**eCDN**) performs a similar function on a private network, and may in fact be an end-to-end solution that addresses content publishing, policy management, end-user discovery and delivery to the edge of the network, often in branch offices or other remote sites.
- Enterprises are rapidly increasing their use of streaming media for eLearning and corporate communications due to the economic downturn and travel reductions caused by the fallout from 9/11 (Enterprise usage ranges from 26%[1] to 35%[2] today and increases to between 42% and 47%[3] in 2002).
- There is a very high correlation between the use of streaming media and the deployment of eCDN technologies. Conversely, eCDN solutions are the primary enabler for enterprise deployment of streaming solutions. [4]
- Hardware/software vendors, such as Inktomi, Network Appliance and Cisco, have CDN focused solutions that intelligently manage the distribution of content to the network edge In response to

---

[1] Market Decisions Corporation (MS), 2001
[2] The HTRC Group, 2001
[3] Gartner Group, 2001
[4] The HTRC Group, 2001

the loss of .COM business and increasing demand in the Enterprise, these vendors have turned their attention to selling eCDN solutions

- Increased use of streaming media will drive additional storage and network upgrades. Vendors with a CDN/caching attach story, such as NetApp and Cisco, have high visibility and leverage with IT decision makers NetApp attaches their CDN solution to their NAS and SAN solutions, while Cisco sell content delivery as a natural extension of their network solutions. The selling process for both of these vendors can be seamless – based on the reality that their rich-media caching products are mere extensions of the infrastructure they've already deployed inside the firewall While lacking the relationships with corporate IT decision makers, Inktomi appears to have the most technically advanced solution based on its unique method of managing and distributing content.
- eCDN/CDN/caching product vendors running on non-Windows platforms, such as Cisco (Linux) & NetApp (proprietary), currently pay Microsoft a royalty for licensing Windows Media protocols, allowing them to stream WM content in dedicated caching appliances (DCA) This royalty is roughly equivalent to the cost of Windows 2000 Server. Inktomi solutions run on Solaris and Linux, although they're preparing to roll out a Windows-based solution.
- The only Windows-based solution comes from Infolibria, a small company in which Microsoft recently made a small strategic investment. , Infolibria, has little market share or momentum as they have no influence with IT decision makers and little if any market differentiation..
- eCDN/CDN/caching product vendors are producing sophisticated management software that not only pushes content to the edge, but also provides policy management, data repair, comprehensive logging and reporting, and integration with billing and ecommerce applications. This software is commanding a premium in the CDN value chain. For example, a feature-laden edge server commands $15k to $30k of which MS received about $1k in either server OS revenue or protocol license royalty.
- CDN service providers such as Akamai, Digital Island and iBeam are also (and for the same reasons as the product vendors) shifting their focus to include the enterprise intranet/extranet offerings. Many are developing solutions deployable inside the firewall in addition to their Internet hosting solutions Virtually all of the 20,000 servers used by Internet CDN's (including 16,000 by Akamai alone) are Linux or Solaris based (Only about 1000 are Windows-based Windows Media servers.)
- CDNs have developed complex algorithms that define the most efficient way to distribute content across multiple networks, and they have more experience distributing that content across a variety of networks than anyone else. They plan to use this expertise, along with a complete solutions selling approach (content creation, eCDN hardware, and Internet hosting) to win business against the eCDN product vendors
- Cablecos & telcos are acquiring major CDNs in a move to be the central player in the content delivery value chain. Cable & Wireless bought both Digital Island and Exodus and Williams bought iBeam.
- Microsoft has no defined strategy for delivering an eCDN platform or solution. The once logical home for this—ISA Server—is pulling back from adding further cache/proxy functionality and will focus primarily on delivering firewall/security functionality.

Threats & Opportunities

Microsoft can stave off major competitive threats to Microsoft strategic initiatives and generate significant incremental revenue by delivering a software platform for intelligently managing content delivery across the network (public or private). Delivering an eCDN solution will ensure Windows server and Windows Media format adoption while at the same time preempting large scale deployment of Linux and MPEG-4 in the enterprise. Microsoft will be able to participate in a market projected to be $1.3 Billion by 2005, as well as provide Microsoft with a content delivery platform that can extend the scalability of other Microsoft distributed servers (such as CMS and SPS).
Server hardware/software product vendors and network service providers are both targeting the enterprises to deliver eCDN solutions. Regardless of which solution is deployed, Microsoft has the opportunity for insertion into the value chain by delivering an eCDN software platform that enables both product-based and service-based solutions.

Strategic Threat
If Microsoft does not address the enterprise need for content delivery networks, it will:
- See large scale deployment of Linux-based caching appliances and servers that will also pull through or attach to Linux/Solaris-based content management, storage and Oracle database solutions.
- Risk losing our 61% Windows Media share in the enterprise[5] to MPEG-4. CDN product vendors who now pay a royalty to Microsoft to license the Windows Media protocol on non-Windows platforms (our only revenue in the value chain.) If this becomes too costly for vendors and enterprise customers—who by the way are dumping Real Networks on the Intranet due to cost[6]—they could simply dump us in favor of the inferior but maturing MPEG-4 standard. (The issue of an enterprise-deployable MPEG-4 player will be solved in the short term, probably by RN.)
- Leave a significant portion of the eCDN value chain to other software vendors. Even if all eCDN vendors move to Windows servers today, it is the management/distribution application layer that commands the premium in the overall cost of the solution. Microsoft is not on a path to participate in this portion of the value chain.
- Fail to participate in a potentially large market, estimated to include 80% of enterprises by 2006[7].

Revenue
The forecast CAGR (2005) of the combined worldwide eCDN market is $1.3 B, consisting of:
- $1.079 B for eCDN products, including hardware and software
- $239 M for eCDN services on the Intranet and Extranet

Examples of Enterprise customers deploying eCDN solutions include Sears (600 Inktomi/Linux - servers), Merck (170 Cisco/Linux servers), Allstate (Between 4 and 15K NetApp appliances depending on final architecture), and AT&T (900 Infolibria/Win2k or Inktomi/Linux).

Opportunity Sources - Today any MS revenue from this market is strictly from server OS licenses. Although product vendors and service providers will account for more Windows Media servers and potentially more Windows servers and SQL Server as the market grows, the larger opportunity for

---

[5] The HTRC Group, 2001, Market Decisions Corporation (MS), 2001
[6] Anecdotal: DMD-Inktomi meeting, 18Dec01, and other customer/vendor feedback
[7] The Gartner Group, 2001

incremental revenue lies principally in the lucrative management software for intelligent content delivery that spans cache/proxy technology (the basis for moving/prestuffing content in the network), IIS/WMS (the bit pumps), Index Server (for content directory services), security, and a layer on top of this that manages the replication and management of content in a distributed infrastructure. In addition, IIS, WMS, and cache/proxy technology is becoming largely commoditized. Incremental revenue comes from rising up the food chain and offering a solution that ties these technologies together.
Revenue Risk – With no competitive Windows-based solution, we miss out on the premium software revenue altogether. Among the products at risk are .Net Server, Office XP, UDRM Another consideration is that CDNs and eCDN vendors have experienced serious revenue losses stemming from the economic downturn and COM demise Significant competitive wins in the enterprise space could reverse that situation, giving competitors the R&D/development resources to produce even more compelling solutions and penetrate the enterprise datacenter even more deeply

Incremental Benefits
Distributed server products such as CMS and SPS could build upon a Microsoft content delivery platform to build solutions that scale through content replication and policy management without having to build that functionality from scratch. In addition, eCDN solutions will pull through incremental Windows server and database servers and drive incremental consulting revenue through MCS, GSIs and MCPs to plan, customize and integrate these solutions into the IT infrastructure.

Recommendation
Microsoft should quickly assemble a team to evaluate the opportunities, options, and trade-offs that lead to a clearly defined and actionable Microsoft eCDN strategy. This strategy should align with the following goals:
1. Enable Enterprise customers and commercial network providers to deploy a Windows-based content delivery network solution
2. Empower server hardware/software product vendors and commercial networks to deliver compelling Windows-based products and services
3. Provide an extensible content delivery platform on which distributed .NET Enterprise Servers can build scalable solutions;
4. Enable Microsoft to participate in the revenue premium for the software intelligence that manages & distributes content to the edge of the network (rather than just the underlying operating system that hosts this software.)

References
- *The Developing Enterprise Edge - Streaming Media and CDN's in the Enterprise*
  - HTRC Group (http://www.htrcgroup com/home.html)
  - \\dmsts\public\enterprise\eCDN\Research\2001_SCE_Study.PDF
- *DMD Semiannual Tracker - Streaming Media in the Enterprise*
  - Market Decisions Corporation