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ONLINE

Network Caching Catches Flak From Some Content Providers

By **JASON FRY** The Wall Street Journal Interactive Edition
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T **HE BUZZ IS GROWING** about companies that make products used to "cache" Web pages, a technology that's assuming increasing importance in the on-line world because it can speed up Internet access and reduce network congestion.

Analysts say that a new era is dawning in which network caching will become an integral -- and ultimately invisible -- part of the Internet's infrastructure, and in which companies ranging from giants like Cisco Systems Inc. to start-ups such as Inktomi, Network Appliance, CacheFlow and Packeteer may flourish. But as it stands, network caching also creates headaches for content providers and on-line advertisers, both of which are regarding new developments with some degree of nervousness.

Caches, whether employed on computer hard drives, company local-area networks or a giant Internet-service provider's system, make copies of

commonly requested Web pages. A user's request for a Web page then goes through the cache: If the cache doesn't have a copy of the page, it lets the request go through and then makes a copy of that page for future use. If it does have a copy, it offers that up, instead of forcing the request to go out over the Internet to the site where the page is housed. That simultaneously gives the user much quicker response and cuts down traffic on the network as a whole.

An increasing numbers of companies use caching for their local-area networks: An October report from Cambridge, Mass., market-research firm Forrester Research Inc. found that more than half of Fortune 1,000 firms surveyed already use some form of caching, and almost all said they planned to deploy caching within two years.

But caching, as it stands today, has its problems, created by everything from poor support for it in current Web protocols to the use of caching products in situations for which they weren't designed. And the current state of caching is of particular concern to content providers and on-line advertisers.

Data Black Holes

Caching's critics complain that what the process essentially does is create data black holes: Information goes in, but it doesn't come out. Since requests for information are intercepted by caches, content providers don't know the answers to basic questions about traffic to their sites: How many people are seeing a given page? Is the copy of the page held in the cache up-to-date? Are people "clicking through" to advertisers' sites? Do the banner ads on the pages need to be refreshed -- a key factor in increasing click-through rates?

"Certainly you can see the technical reasons why caching is important in

business analysis for the Newspaper Association of America, of Vienna, Va. "But it's a huge issue for sites that sell advertising and [for] advertisers."

Sites typically guarantee advertisers a certain number of "exposures" of Web users to banner ads for their ad dollar, Mr. Conaghan notes -- but caching prevents sites from counting part of that audience. That leaves them overdelivering exposures and underreporting click-throughs -- and that means lost money.

The on-line industry has understood for some time that the problem exists, but estimates of its magnitude have varied. But earlier this year, MatchLogic Inc., a Louisville, Colo., provider of on-line advertising management services, conducted a study that appears to shed some light on the issue. MatchLogic looked at more than 200 Web sites and found that actual viewing of ad pages was 76% above what's commonly reported -- with impressions on popular pages running as high as 674% of current measurements.

The study showed that the industry's counting problem was more serious than had been estimated. For caching's discontents, that's a sobering thought, particularly in light of the fact that caching is being increasingly adopted by giant Internet-service providers, or service providers. America Online Inc., with some 10 million members, says it probably caches more than 100 million Web pages a day.

"It's one thing if [advertisers] can't understand as well as they like their traffic from one company," says Ted Julian, Internet research manager for International Data Corp. "It's another thing when it's an entire Internet-service provider."

The Bandwidth Gap

The problem that caching sets out to solve is a fundamental one: By some estimates, says Dick Pierce, vice president of marketing and sales at Inktomi Corp., "bandwidth demand is increasing as much as tenfold a year, and the ability to build out capacity is only tripling."

"That gap is the problem," Mr. Pierce says. "A lot of people will say we're going to close that gap, but no one can foresee the new services and applications that a global networked community will want, desire and be willing to pay for."

Whatever those services and applications are, if the estimates are correct, we'll be frustrated at networks' inability to provide them quickly enough.

Such cyber-math seems positively Malthusian -- but caching offers a way to escape the numbers -- and for less money. It's as much as 50 times cheaper, Mr. Pierce says, to build storage than it is to build pipes for more bandwidth.

"Throwing bandwidth at the problem is not only expensive but also inefficient," agrees Mr. Julian.

Inktomi's target audience for its Traffic Server network cache, Mr. Pierce says, is "first and foremost" people building networks -- "predominantly service providers, but it won't be long before corporations get into the game as well."

Mr. Julian says. That's for a good reason: Caching saves them money, since they already have to pull most of their content from the U.S. over international phone lines.

In tests, Mr. Julian says, Inktomi's product can create a situation where up to 40% of pages are pulled out of cache, which could translate to millions of dollars a year in savings for service providers in other countries.

Breaking the Cache Trap

But could it also mean more headaches for content providers? Already, some sites' Webmasters mark their pages as "uncacheable" to perform an end-run around caches. That ensures that people get fresh material, but it also means slower response time, which surfers don't like. Meanwhile, some network administrators have countered with their own tricks to foil cache-busting, or have simply denied access to uncacheable sites.

The arms race reflects a war of priorities between content providers who need information about site traffic and network administrators concerned about a more fundamental problem. "People realize conceptually that caching is an issue," says Mr. Conaghan, "but most companies setting up a cache are worried about what the user sees."

But in both the short and long-term, solutions are emerging.

MatchLogic, having demonstrated the extent of the caching problem, thinks it has a way to please both sides. The company's TrueCount system adds a small element to the header of a piece of content, typically a banner ad. The ad is cached along with the rest of the page in question, but the much smaller element

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