

## Design Within Reach: Online Shoppers See Furniture Up Close and Personal



### Key Challenges:

- To bring innovative furniture designs to design professionals and design-savvy customers
- To speed up customer downloads of high-resolution images as online business grows
- To reject Content Distribution Network (CDN) solution, due to risk of increased bandwidth usage

### Key Benefits:

- User downloads up to 30% faster, based on independent Keynote report
- Bandwidth usage dropped an estimated 20%
- One of four Web servers and the load balancer became expendable

Design Within Reach aims to bring innovative furniture designs, often with a European flair, to design professionals and design-savvy consumers. The company has 14 retail “design studios” across the United States, which showcase a representative sampling of its merchandise. But a great deal of the company’s business is done through its Web site, [www.dwr.com](http://www.dwr.com).

Not only has the number of customers accessing that Web site from their homes and offices grown steadily, but the firm’s retail outlets have made increasing use of on-site Internet kiosks to let salespeople show customers the full range of available products. Since joining Design Within Reach as technology director in 2001, David Luk has been looking for ways to improve the Web site’s performance, to better serve his customer base.

### Customers Want to Download Designs Fast and in Fine Detail

“It’s not just a matter of customers wanting information fast,” said Luk. “The nature of our business demands that our site use extremely high-quality, high-resolution images. Customers want to look closely at a chair or sofa – zooming in and really seeing the fine details of the piece. That takes a lot of network bandwidth, and it puts a lot of pressure on our servers.”

One approach Luk considered for relieving that pressure was a Content Distribution Network (CDN) service, which claims to use caching technology to help high-traffic Web sites scale for peak loads.

“We evaluated a CDN solution from one of the key providers in early 2003, and found that it did improve performance to some extent,” Luk said. “But it required significant code modification to our servers. We also discovered that certain kinds of Web pages may not be cacheable because of the way they interact with our database. In fact, because our servers update their content so often, the CDN nodes would have to pull down fresh content from our site very frequently, which could actually increase our bandwidth usage.”

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**David Luk**  
Technology Director  
Design Within Reach

Soon afterward, another approach came to Luk's attention: application acceleration technology from Juniper Networks. Juniper Networks Web I/O acceleration solution works by offloading most Transmission Control Protocol (TCP) and Hypertext Transfer Protocol (HTTP) duties from the Web server. By taking over these tasks, it allows the Web server to satisfy more HTTP requests in less time, using fewer resources. Outbound data is also optimized in real time, reducing the number of bits sent to end users or stored in caches, thus speeding server response times and Web content delivery across the Internet.

### High-Quality Images Downloaded 30 Percent Faster; Bandwidth Saved, Too

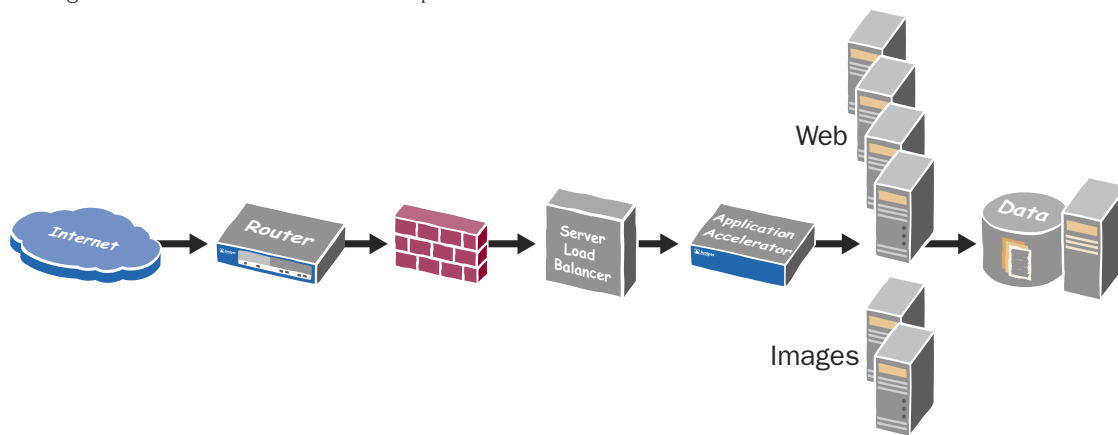
In May 2003, Design Within Reach deployed a Juniper Networks DX™ 2200 application acceleration platform on a trial basis. The DX 2200, an application front end appliance that supports 64 virtual IP addresses and up to 50,000 simultaneous connections, was placed between the load balancer already in use and the site's Web servers.

"The DX 2200 platform more than lived up to its billing as being easy to install," Luk recalled. "It took us all of a half hour to get it up and running, with no hassles, and we saw improvements

immediately. User downloads of text and high-quality images were accelerated by as much as 30 percent once the Juniper Networks box was installed." These results were confirmed by Keynote Systems, an Internet performance management and testing service used by Design Within Reach to measure its Web-site performance.

While from Luk's perspective the customer's experience is the paramount factor in Web-site performance, an additional benefit was that bandwidth usage went down as well – an estimated 20 percent – primarily because of compression and the fact that no caching was required. "It's good to know that, moving forward, we'll have additional bandwidth headroom," he said. "The DX 2200 unit will more than pay for itself in a matter of months. And, compared to a CDN solution, we can easily save more than \$20,000 a year."

During the initial evaluation of the DX 2200 platform, Luk added, "we took one of our four servers out of the rotation and saw no performance change at all. So we know now that with the DX 2200 unit installed, we could cut back on at least one server if needed, without any impact on Web I/O speed. We're considering removing our load balancer, as well."



Design Within Reach's New High-performance Network



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